SEQUENCE LISTING

<110> Yousef, George M.
Diamandis, Eleftherios

<120> Novel Human Kallikrein-Like Genes

<130> MTS3USA

<140> US 09/936,271
<141> 2001-09-10

<150> PCT/CA00/00258
<151> 2000-03-09

<150> US 60/124,260
<151> 1999-03-11

<150> US 60/127,386
<151> 1999-04-01

<150> US 60/144,919
<151> 1999-07-21

<160> 96

<170> PatentIn version 3.2

<210> 1
<211> 4740
<212> DNA
<213> Homo sapiens

<400> 1

```
tatctcatga gagagaataa gaacatgaaa agagaaagaa tgagagagag agagagaaag       60

aaaaaggaga gtggagtcta ggatctgggc aggggtctcc tccctgggtc cctagaccct      120

gctgccagcc ccttctgggc ccccaaccac tgcctggtca gagttgaggc agcctgagag      180

agttgagctg gaagtttgca gcacctgacc cctggaacac atccctgggg ggcaggccag      240

cccaggctga ggatgcttat aagccccaag gaggccctg cggaggcagc aggctggagc      300

tcagcccagc agtggaatcc aggagcccag aggtggccgg gtaagaggcc tggtggtccc      360

ccactaaaag cctgcagtgt tcatgatcca actctcccta cagctccatg tcgctggatt      420

ctcagcctct gtgccttctg tctccacatc tctctagaca gatctctcac tgtctctagt      480

taggagtcac tgtctctagt taggggtctc tctgtctctc tgaatctata tctccatgtc      540

taactctcag actgtctctg aggatatctc tcaagcactc tgtctctccg gctctgattc      600

tctgtgtgtc ttccctccat gcttgtttgt gggtggctag acaccatctc tccccattca      660

cagatggcta gatgctttct ctaaactttc ctttctacct agttctctct ctctctcttt      720

tcccatctct ctctctcttt ttctctctca gtctctaaat ctgtctctct aggttctggg      780

tccatggatg ggagaggggg tagatggtct aggctcttgc ctacctaata acgtcccaga      840
```

1

```
gggaagaaag ggagggacaa agagagggat ggagagactt gggctgaaga tccccagaca      900

cggctaagtc tcagtcctca tccccaggtg ctgacgtgat ggccacagca ggaaatccct      960

ggggctggtt cctggggtac ctcatccttg gtgtcgcagg tatctgagta tgcgtgtgtg     1020

tgtctgtccg tgcttggggg cacagtgttt gttaatgttc aggtgtgact cagtgtcctc     1080

ttgcttgtga ctgcaaagct gcctgtgaga cggtaccgtg ttatccgtcc gccatggctg     1140

tgcccctgca actccttgta tcgtggtaaa tttgtgtgtg gcagtgtgcc tgggtgtgtg     1200

gttgtacctg tgagactctg acagtttgtg cctctgaata tctggtggag tgacaacagt     1260

gtaatgatga tatggggaca ggggaagccg agggtgcagg agattgtgct tcctggggcg     1320

tgatccattg ctgggaatct gtgcctgctt cctgggtctt cagtcctgag atccccctct     1380

cccatcccca aggaactcac ctcacaggac tataaaacgg tgttttggtg tgcatgggct     1440

tgtggcttgg tgtgactgtg ggcaaggctg ggagaggata ggagtgactc ggcgcaggac     1500

cgactctttg agcatcagtc tgcgcagaca agtgacccga tccttgctcc cagcaacaac     1560

tccaccccct gagctttaat tcaccccgaa ggacccgatc ctaccgctat gagcctagac     1620

tcctctgttg aacccctcct gaccgtggct ttgcaccgcg atggcaccag tctcacctcc     1680

agagctcacc ccagagccct gactccgccc cagaagccct ggtcccacct tctgagactg     1740

cctctagcca taacccagct cttgaagcct tgatggcgcc cctgcgctgt aaccccaacc     1800

ctaggagcac tgatcccgcc ttctcagccc acccccatgc cctgactctc ctcccaggag     1860

ccctgactac cctgaatccc tgaccaggct cctgcaccgt gatcaccgcc cctgggagcc     1920

ctaggcctat atcctggacc agccctgaa gctccgatca tgacccctgc accataaccc     1980

cacccccagg agccctgggt ccgcccctg ggcccgcccc cagccctgac tcggcccccc     2040

aagagtcctg actgctcctg aagccctgac cacgcccctg ctcggtaacc cctcccccaa     2100

gagccctggg cccgcctcct gagcccgttc ccagccctga ctccgccccg aggagccctg     2160

actgctcctg aacctctgac cacgcccctg ctcggtaagc ccaccccca gaaccctggg     2220

cccgcctcct ggtcccgatc ccatccctga ctccgccctc aggatctctc gtctctggta     2280

gctgcagcca aatcataaac ggcgaggact gcagcccgca ctcgcagccc tggcaggcgg     2340

cactggtcat ggaaaacgaa ttgttctgct cgggcgtcct ggtgcatccg cagtgggtgc     2400

tgtcagccgc acactgtttc cagaagtgag tgcagaggta gggggagtgg gcagggcctg     2460

ggtccggggg cggggcctaa tatcaggctc atcttggggt gctcaggggg aaacagcggt     2520

gaaggctctg ggaggaggac ggaatgagcc tggatccggg gagcccagag ggaagggctg     2580

ggaggcggga atcttgcttc ggaaggactc agagagccct gacttgaaat ctcagcccag     2640
```

2

```
tgctgagtct ctagtgaact aaggcaagtt cttgtccctg aatttttgtg aatgaggatt    2700

tgagaccatg gttaagtagc tcttagggtg tttagcgaag agggtggggt tggggttagg    2760

agatggggat gggaatgggg ttgaagatga gaatggaggt aaggatgtag ttgccacaaa    2820

actgacctgc cctccgtggc ccacagctcc tacaccatcg ggctgggcct gcacagtctt    2880

gaggccgacc aagagccagg gagccagatg gtggaggcca gcctctccgt acggcaccca    2940

gagtacaaca daccccttgct cgctaacgac ctcatgctca tcaagttgga cgaatccgtg    3000

tccgagtctg acaccatccg gagcatcagc attgcttcgc agtgccctac cgcggggaac    3060

tcttgcctcg tttctggctg gggtctgctg gcgaacggtg agctcacggg tgtgtgtctg    3120

ccctcttcaa ggaggtcctc tgcccagtcg cgggggctga cccagagctc tgcgtcccag    3180

gcagaatgcc taccgtgctg cagtgcgtga acgtgtcggt ggtgtctgag gaggtctgca    3240

gtaagctcta tgacccgctg taccacccca gcatgttctg cgccggcgga gggcaagacc    3300

agaaggactc ctgcaacgtg agagagggga aggggaggg caggcgactc agggaagggt     3360

ggagaagggg gagacagaga cacacagggc cgcatggcga gatgcagaga tggagagaca    3420

cacagggaga cagtgacaac tagagagaga aactgagaga aacagagaaa taaacacagg    3480

aataaagaga agcaaaggaa gagagaaaca gaaacagaca tggggaggca gaaacacaca    3540

cacatagaaa tgcagttgac cttccaacag catggggcct gagggcggtg acctccaccc    3600

aatagaaaat cctcttataa cttttgactc cccaaaaacc tgactagaaa tagcctactg    3660

ttgacgggga gccttaccaa taacataaat agtcgattta tgcatacgtt ttatgcattc    3720

atgatatacc tttgttggaa ttttttgata tttctaagct acacagttcg tctgtgaatt    3780

tttttaaatt gttgcaactc tcctaaaatt tttctgatgt gtttattgaa aaaatccaag    3840

tataagtgga cttgtgcagt tcaaaccagg gttgttcaag ggtcaactgt gtacccagag    3900

ggaaacagtg acacagattc atagaggtga aacacgaaga gaaacaggaa aaatcaagac    3960

tctacaaaga ggctgggcag ggtggctcat gcctgtaatc ccagcacttt gggaggcgag    4020

gcaggcagat cacttgaggt aaggagttca agaccagcct ggccaaaatg gtgaaatcct    4080

gtctgtacta aaaatacaaa agttagctgg atatggtggc aggcgcctgt aatcccagct    4140

acttgggagg ctgaggcagg agaattgctt gaatatggga ggcagaggtt gaagtgagtt    4200

gagatcacac cactatactc cagctggggc aacagagtaa gactctgtct caaaaaaaaa    4260

aaaaaaaag actttacaaa gagatgcaga gacactgaga cagataaaca agccacaaag    4320

gagacaaagg agagacagac aaacagaaac agacagacca caagcccaag agaagcagcc    4380

agcattcagg acataggaca tcgggaagca ggattagatg aagtcaggga tctggaatgg    4440

gacttccaac agatatgttg ctgggctatg ttgttattga tgatggttct gtctttgttt    4500
```

3

```
ctcagtctca tttagttcct ttctgagccc atatccattt ccacctctct gtgttttgaa    4560

ttctgactct ccctctcttc acaacagggt gactctgggg ggcccctgat ctgcaacggg    4620

tacttgcagg gccttgtgtc tttcggaaaa gccccgtgtg gccaagttgg cgtgccaggt    4680

gtctacacca acctctgcaa attcactgag tggatagaga aaaccgtcca ggccagttaa    4740
```

<210> 2
<211> 237
<212> PRT
<213> Homo sapiens

<400> 2

```
Ser Leu Val Ser Gly Ser Cys Ser Gln Ile Ile Asn Gly Glu Asp Cys
1               5                   10                  15

Ser Pro His Ser Gln Pro Trp Gln Ala Ala Leu Val Met Glu Asn Glu
            20              25                  30

Leu Phe Cys Ser Gly Val Leu Val His Pro Gln Trp Val Leu Ser Ala
        35                  40                  45

Ala His Cys Phe Gln Asn Ser Tyr Thr Ile Gly Leu Gly Leu His Ser
    50                  55                  60

Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met Val Glu Ala Ser Leu
65                  70                  75                  80

Ser Val Arg His Pro Glu Tyr Asn Arg Pro Leu Leu Ala Asn Asp Leu
            85                  90                  95

Met Leu Ile Lys Leu Asp Glu Ser Val Ser Glu Ser Asp Thr Ile Arg
            100                 105                 110

Ser Ile Ser Ile Ala Ser Gln Cys Pro Thr Ala Gly Asn Ser Cys Leu
        115                 120                 125

Val Ser Gly Trp Gly Leu Leu Ala Asn Gly Glu Leu Thr Gly Arg Met
    130                 135                 140

Pro Thr Val Leu Gln Cys Val Asn Val Ser Val Ser Glu Glu Val
145                 150                 155                 160

Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe Cys Ala
                165                 170                 175

Gly Gly Gly Gln Asp Gln Lys Asp Ser Cys Asn Gly Asp Ser Gly Gly
            180                 185                 190

Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Val Ser Phe Gly Lys
        195                 200                 205

Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val Tyr Thr Asn Leu Cys
    210                 215                 220

Lys Phe Thr Glu Trp Ile Glu Lys Thr Val Gln Ala Ser
225                 230                 235
```

4

<210> 3
<211> 254
<212> PRT
<213> Homo sapiens

<400> 3

Met Ala Thr Ala Gly Asn Pro Trp Gly Trp Phe Leu Gly Tyr Leu Ile
1   5   10   15

Leu Gly Val Ala Gly Ser Leu Val Ser Gly Ser Cys Ser Gln Ile Ile
            20   25   30

Asn Gly Glu Asp Cys Ser Pro His Ser Gln Pro Trp Gln Ala Ala Leu
        35   40   45

Val Met Glu Asn Glu Leu Phe Cys Ser Gly Val Leu Val His Pro Gln
    50   55   60

Trp Val Leu Ser Ala Ala His Cys Phe Gln Asn Ser Tyr Thr Ile Gly
65   70   75   80

Leu Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met
            85   90   95

Val Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Pro Leu
            100   105   110

Leu Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu Ser Val Ser Glu
        115   120   125

Ser Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln Cys Pro Thr Ala
    130   135   140

Gly Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu Ala Asn Gly Arg
145   150   155   160

Met Pro Thr Val Leu Gln Cys Val Asn Val Ser Val Val Ser Glu Glu
            165   170   175

Val Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe Cys
            180   185   190

Ala Gly Gly Gly Gln Asp Gln Lys Asp Ser Cys Asn Gly Asp Ser Gly
        195   200   205

Gly Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Val Ser Phe Gly
    210   215   220

Lys Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val Tyr Thr Asn Leu
225   230   235   240

Cys Lys Phe Thr Glu Trp Ile Glu Lys Thr Val Gln Ala Ser
            245   250

<210> 4
<211> 278
<212> DNA
<213> Homo sapiens

```
<400>   4
tgacccgctg taccacccca gcatgttctg cgccggcgga gggcaagacc agaaggactc         60

ctgcaacggt gactctgggg ggcccctgat ctgcaacggg tacttgcagg gccttgtgtc        120

tttcggaaaa gccccgtgtg gccaagttgg cgtgccaggt gcctacacca acctctgcaa        180

attcactgag tggatagaga aaaccgtcca ggccagttaa ctctggggac tgggaaccca        240

tgaaattgac ccccaaatac atcctgcgga aggaattc                                278


<210>   5
<211>   20
<212>   DNA
<213>   Artificial

<220>
<223>   primer

<400>   5
tgacccgctg taccacccca                                                      20


<210>   6
<211>   20
<212>   DNA
<213>   Artificial

<220>
<223>   primer

<400>   6
gaattccttc cgcaggatgt                                                      20


<210>   7
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   primer

<400>   7
ggtgatctgc gccctggtcc t                                                    21


<210>   8
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   primer

<400>   8
aggtgtccgg tggaggtggc a                                                    21
```

6

```
<210>  9
<211>  18
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  9
tgcgcaagtt caccctca                                                        18


<210>  10
<211>  19
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  10
ccctctcctt acttcatcc                                                       19


<210>  11
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  11
acaatgagct gcgtgtggct                                                      20


<210>  12
<211>  21
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  12
tctccttaat gtcacgcacg a                                                    21


<210>  13
<211>  11570
<212>  DNA
<213>  Homo sapiens

<400>  13
gggcccagag tgaaggcaag agaaggagtt gagagctccc tctgcaaagt ggcttgagtc    60

tcccctgcct aaaatgcagg gagagggagg cagaaagaca gggaagagga aggggtgggg    120

aagaaagaga gagagagaga gagacagaat aacacaacta cagaaacaca gagagaacac    180

acagagagcc tgggacacag ggacacacag agtcagagag aaaagagaag atagagaaag    240
```

7

```
acacaaatgg agacacagag gtgtaaagaa agagagatta acagagtccc agatacacgc       300

aaaggggcag aagcacagtt ttcagggtgg tgtctatgat catcttcttt tttttttttt       360

tttttttttt tttttgagac ggagtctcgc tctgtcgccc aggctggagt gcagtggcgg       420

gatctcggct cactgcaagc tccgcctccc gggttcacgc cattctcctg cctcagcctc       480

ccaagtagct gggactacag gcgcccgcca ctacgcccgg ctaatttttt tgtattttta       540

gtagagacgg ggtttcaccg ttttagccgg gatggcctcg atctcctgac ctcgtgatcc       600

gcccgcctcg gcctcccaaa gtgctgggat tacaggcgtg agccaccgcg cccggccatg       660

atcatcttct tgactatgct gatgtgacaa gtacctaaag ccatcagact ctacccttta       720

aatatgcagt ttgggccagg caccgtggct catgcctgta attccagcac tttgggaggc       780

agaggtgggt gaatcacttg aggccaggag tttgagacca gcctggccaa catggtgaaa       840

ctctgtcttt actaaaaaaa aaaaaaaaaa aaaaaaaatc agccgggtgt cgtggggcac       900

acctgtaatc ccagctatgc tggaggctga ggcacgagag tcacttgaac cctggaggcg       960

gaggttgcag tgggccgaga tcacatcacc gccctccagc ctgggcgaca gagcaagact      1020

ctgtctcaaa taaataaata aacaaacgaa caagcagttt gttgtacctt agttatatct      1080

aaaaaaaaaa tgctgtcaac aaatagagca gaagtgaaat aaaggaaaat aaatgggcca      1140

agaactctaa ggtatatttg acaaatcatt cagaaccttt aaaaaagaaa gaatcacaga      1200

ggcatagaaa gacagggagg aacagggaga cagaaacacc tgtggcccaa ggagaacaaa      1260

acaaggctcc taagacagac aggaggagag agagagagag tgagtgagag acagacagag      1320

aaaaagacag agagagagag acagagacag agagacagag aggcgagagg gatagaaaga      1380

gagagagggg tggagagaga cacgagatat tgagagagac tcagaaagat agccgaggga      1440

gaaccacaga gagatggaag aagactctga gaaaaaacca gagacaaaga tggaaagagg      1500

agtatcgagg gtgaacagac agtggtggaa tgagcaaaat gcagagaaga aagcaagcaa      1560

tccaggcgcc aagaatagtg acccagagtt ggtgagaagc cagatcctta aggctggggg      1620

aggcagggaa ggggctggcc tggcttccgg agacccctcc ccattctccg ggccagggag      1680

gtagggagtg acattccgga ctgggtgggg ggtgctctgg gggtggagat aggggagca       1740

ggaggagcta ttgctaaggc ccgataggca cctcattgcc cgggaatgtg ccccagggag      1800

cagtgggtgg ttataactca ggcccggtgc ccagagccca ggaggaggca gtggccagga      1860

aggcacaggc ctgagaagtc tgcggctgag ctgggagcaa atcccccacc ccctacctgg      1920

gggacagggc aagtgagacc tggtgagggt ggctcagcag gcagggaagg agaggtgtct      1980

gtgcgtcctg cacccacatc tttctctgtc ccctccttgc cctgtctgga ggctgctaga      2040
```

8

```
ctcctatctt ctgaattcta tagtgcctgg gtctcagcgc agtgccgatg gtggcccgtc    2100

cttgtggttc ctctctacct ggggaaataa ggtaggggag ggaggggaag tgggttaagg    2160

gctccccgga tcgcctgggc ctcccaaccc tctgacattc cccatccagg tgcagcggcc    2220

atggctacag caagacccccc ctggatgtgg gtgctctgtg ctctgatcac agccttgctt    2280

ctgggggtca caggtaacca gaactctggg gtgggagggt tgtgggattg ggaggactgt    2340

ctctgcggca ctagagcgcc tgtcccctgg ggaactgtgt gagcctgggc atgactccgg    2400

gaccgggtga atgtgagtct ctgtctgtac ttgtggttgt gcgatcgtat gtggccctgt    2460

gactgccacg gtgtgtgtcg gggagggggga tgccttttcc catatcaggt gactgtgcgg    2520

caggtggcac tgaccctttg aggctgtgtg tgtggttttg tgattgtgtg tgcatttaag    2580

attgtgtgtg gctccacagc tgtgtgggtg aatgcatgta gcactggggg tgttcactgt    2640

gtgtttggct gtgtgtggtg acttggcatt gtatatgact gcaggtatct gcagttcctg    2700

tccctgaggt cccgggattg cgtgcaacaa aagtggtcat caccatggaa agctgtgact    2760

gtgtgctgct tgcaggcgat tatgtgattg tggctgagtg tgacgttatg gatgcccgta    2820

tttgtgaccg tgtgactacc tgaagctctg tgtaggggtg actgtatgtg actgtgtgtg    2880

tctgtgtgag gccgtgtaaa tgctactgta tgtgtgatgg tgcagctgtg tgtctggagt    2940

ttctgtctct gcctggaggg atagagggtg caggggtagc tatctctggg agatgggtgc    3000

caggtgactg acttgcagtg tgtgcctgtg tgcagaagag tatgtggcag tctgaacatc    3060

tgtgcacaca cggcatctgt gcgtggcact gagacactgt ggatgagggt gtgcgatccc    3120

gctaggctgc ccgggagcgt gtgtacctgg agacagagct gtatgttagc tgcacctgtg    3180

gaggcaacat gggcgtgtct gcagaactgc gtgcgtgctt ggctgttact gctgttgtgc    3240

gcgtggttct tggggtgagt tcgtgaatga tggtggtgcc agggccatca gcaagggtaa    3300

gaaccaggcc gggcgcggtg gctcacgcct gtaatcccag ccctttggga ggccgaggca    3360

ggcggatcac ctgaggtcgg gagatcgagg ccagcctgac caacatggag aaccccgtct    3420

ctactaaaaa tacaaaaaat tagctggtgt ggtggcgcgt gcctgtaatc ccagctactc    3480

gggagactgg ggcagaaaaa tcgcttgaac ccgggaggtg gaggttgcgg tgagccgaga    3540

tcgcgccatt gcactccagc ctgggcaaca agagcgaaac tccgtctcga aagaaaaaaa    3600

gaaaaaaaaa agggtaagaa ccagtgaatg ggcacgggag gactgatgat ggagtggggc    3660

atgcatgtag tctgtaggtc tgtgtgtgag aggaggagat tgacaggatt gagaaggcat    3720

gttttcatct gagaattcag aaacctaggc ctgctcttcc cctccatgtg gcccctaag     3780

ctgagccctt ctttcctggt cctgctttcg gaaccctagc tccgcccatg agctctgacc    3840

ccacctcctt tcctcaacca cgcccctagg ccagactcta gtggaccccg cctaaggcca    3900
```

9

```
cacccctttg ggccaggctc caccccctat tctgtgggta ccttctagaa ccccccttcaa    3960

agtcagagct tttttttttt tttttttgga gacagtcttg ctctctctcc caggctggag    4020

tgcagtggcg tgatctcggc tcactgcaac ctctgcctcc caggttcaag tgattctcgt    4080

gcctccacct cctgagtagc tgggattaca ggtgcgcgcc accacgcctg gctaattttt    4140

gtgtctttag tagagacagg gtttcacctt gttggccagg ctggtctcaa actcccaacc    4200

tcaggtgatc cgcccacctc ggcctcccag agtgctgggg ttacaggcgt gagccaccgc    4260

ccccagccca aagtcagagc tctttatagg agactctaac atgtaaccct gaccctggcc    4320

ctaactaagt caattccaaa ccccttcctg cctccagccc tgaccccact cactgaggcc    4380

tgaccccact tcttgagacc agttccatcc ctaaagccct ggtctccctc ccatccccag    4440

gctccagccc ccacagcttt ggcactaccc ctgagcttgt ccaggaatcc tgtacccaat    4500

tttaccctca catgtagttc tagccaattc caggaatctg tgaggtccag ttagagtcca    4560

gtaaccctac ctgagcctgg gctctgtcct tgagcttgag cctgggcttg agaggtgcca    4620

ctcttattct ccaggccctg cccctgcccc ctcagcatgt cagacaccca ccctctagct    4680

ggtctggcct cttgagtctg aaacccaccc ccagcccaag ccccgcctct gagccccgcc    4740

caacccattt tccgttccca gagcatgttc tcgccaacaa tgatgtttcc tgtgaccacc    4800

cctctaacac cgtgccctct gggagcaacc aggacctggg agctggggcc ggggaagacg    4860

cccggtcgga tgacagcagc agccgcatca tcaatggatc cgactgcgat atgcacaccc    4920

agccgtggca ggccgcgctg ttgctaaggc ccaaccagct ctactgcggg gcggtgttgg    4980

tgcatccaca gtggctgctc acggccgccc actgcaggaa gaagtgagtg ggagttccaa    5040

gaggagggtt ggtggggacg gggaagtggg ggtgggggtg gggaagtggg ggtgggggtg    5100

tcatggaggt gagggctggt ggggacgggg aagtggggtt gggggtgtca tggaaggtga    5160

gggttggtgg ggatgggttg gggatgtggg agcaggagga ggtcgagttg gggataggac    5220

taaggatgga gttttgcggg ggagcaaggt gggaggatga ggttggagag gggagagtgt    5280

tgtggtaggg aatgggaagg agccaaggat gggttggatt tggggttagg agcatatatt    5340

tgttgaatgg tttgggatgg aggtggaatt gggattggct ttagaattgg gggtgggtga    5400

aaatcgggct ggggtggaaa tgaagatagc atggagatag ggttgagatt gggagcagat    5460

atagaatgaa ggatggggat tggagttttg ggtggggttg gagatggttg gatttgggct    5520

tgagaatgca tatggtgatg gcttctgggt agggaaagaa ttagggttgg gaatgggatg    5580

ggtttggaat tgtgactggg atggggacag gcatgggatt ggagaccaag agggagttga    5640

ggatggtttg gggaccgggg gtggggatgg gggtgggggct ggggctgggt gtggggttgg    5700
```

10

```
gattggcgtt ggacgtggag atagagatca gggttggtgg tgacctgccc catcttcctc    5760

agagttttca gagtccgtct cggccactac tccctgtcac cagtttatga atctgggcag    5820

cagatgttcc aggggggtcaa atccatcccc caccctggct actcccaccc tggccactct   5880

aacgacctca tgctcatcaa actgaacaga agaattcgtc ccactaaaga tgtcagaccc    5940

atcaacgtct cctctcattg tccctctgct gggacaaagt gcttggtgtc tggctggggg    6000

acaaccaaga gcccccaagg tgagtgtcca ggttcttctt gataccgacc catctctgcc    6060

gccttccatc tttctccact tctcattgtg ttcctgtttg acagtgcact tccctaaggt    6120

cctccagtgc ttgaatatca gcgtgctaag tcagaaaagg tgcgaggatg cttacccgag    6180

acagatagat gacaccatgt tctgcgccgg tgacaaagca ggtagagact cctgccaggt    6240

gaggacacct ctctttattc agcagataca cactgagtgc caactcggta acatggagcg    6300

ttgccaaatt ctgagaatcc agcaattgcc aagacagtca ggacccctgt tctcacagag    6360

ctcataccct agagtagtgg tgtttagtag aaataatgct gagctgctta tgtcatttcc    6420

agttttttag tagccacatt aaaacaggta aaaaaggctg ggcgcagtgg ctcacacctg    6480

taatcccagc actttgggag gctgaggcag gcagatcacc tttggtcagg agtttgagac    6540

tagcctggcc aacatggcga aactctgtct ctaaaaaaaa atacaaaaat tagcctggca    6600

tggtggcggg cgcctgtaat ctcagctgct caggaggccg agacacaaga atcacttaaa    6660

cccaggaggt ggaggttgca gtgagctgag atcgtgccac tcactccaac ctgggagaca    6720

gagtgacact tttgtctcaa aaagaaaaaa aaaaacaagt aaaaagaaa caggtgaagt    6780

taactttaat aacccaatgt atcccaaata caatcatttc aaagtgtaat taatataaaa    6840

caattatgaa tgagatactt tacattcttt tcttgttttc atattaagtc tttgaaagtg    6900

agtatatatg ttatgctgac agcacatctc aatttggact agctacattt caggtgctca    6960

gtagccacat gtggctagca gttactgtat tggatggcac ggatctagag ggaaagatca    7020

gggctgtttt gtatggttgg gcaggttgtg cactgcataa agataccata tctaataggg    7080

gcactccgtg ttacagatgt cagttttggc agttttcagg cgtgtggtag ttaagtgtct    7140

tgtttcaaca aaatctgtaa tatgacagtt ttctagcaag tgctggtaaa atatcttgag    7200

gaaggaaaag agaaatctgg taggtatttt tacaagagaa tatttaatac aggggattaa    7260

ttgcaaagct gctggaaggg ctggaggaac aaagttaaaa aataaaaaac tctgtggtca    7320

agaatctgca taaatagggc aatttcagag agtggtaaag gttaacccca aaataaaaca    7380

tggtttagg atagtaaaca ataagggcca atattcaaaa aggtggtcag gggagcctcc    7440

ttggagaggt ggcatttgag cagagaatgg atgacacaaa gaagctaaac tcgtgaagtt    7500

taaggggaaa gaaaaggcac gtgcaaaggc cctgaggcag taaggaattt ggctgattca    7560
```

11

```
aagaagaaga ggaaaccaat gcaactggag aacaaaagtg ggggcaacag tagaaagtga    7620

cgctggaggt gtaggcaggg gcgaatgctc tgcaagtatt tcttggtcac caacacagag    7680

cttccctatg ttctaatgga agctgtatct gttgaggaag acagaattta aaatcaaact    7740

gttacatcaa ccagcaccct tctctgtatt caggctccca agggatctag aaggacgtaa    7800

gttaacaagc tctcattagc agggtgtgtg tttcaacagt agttaggaag ctggggattc    7860

aggagtactc cagtcccatg gctatgaaaa gctccccca aattgtacaa acctgacaaa    7920

tgcaacacct ccccagctct ccccatttct tctctgtgcc ctgggtgtgg gggggtgggt    7980

tgcgaggggg aaaacttta acagaagaaa gcacatctcg gccgggcgtg gtggctcaca    8040

cctgtaatcc caacactttg ggaggccgag gcgggtggat cactaggtca ggagatggag    8100

accatcctgg ctgacacggt gaaaccctgt ctctactaaa aacacaaaaa attagccggg    8160

cgtggtggca ggcgcctgta gtcccagcta ctcgggaggc tgaggcagga gaatggcctg    8220

aacccgggag gcggaacttg cagtgagccg aggttgcacc actgcactcc agcctgggca    8280

acacagtgag actccgtctc aaaaaaaaaa aaagaaaaga aagaaatca catctcattc    8340

aagtggtggc atttaaaact atttagcctt tctgtaggca aggttagtat cttgtttttc    8400

cagacctcaa ggtgtttttt tgtttgtttt ttcataccgg tgtgtggtct gggtgtggcc    8460

actaaaagct acaagcaaga aataataaca actacaacaa tactaatacc aatagtataa    8520

aaataatagc atctggctaa ttgctggaca ctgttttaag tggtttgcat gcctcagctc    8580

attaactcat ttacctgtta ttattggccc tattttacaa acaaggagcc aaggctcaga    8640

gcagttaact aacagcctct caaaagaaac tctgcagaga tattaaattt aaaaaataat    8700

gagagaaatt aaaccacaag aaagttgaaa tttagaggta caggcagcta agcttgtttg    8760

ctttgaaaca gtgtctgcta ctgggaaaaa ggcaagtctt ggctttccta ataattgata    8820

ccaggactct gtaattcata ttttgcatgc atgtaagtaa gaaatgaagc cgggtgcaat    8880

ggcacatgcc agtaatccca gcactctggg agactgaagt gggaagatca cttgagctca    8940

ggagttcaag accagcctgg gcaactaaaa attaaaaaaa taaaaatact aattgttttt    9000

attttagtag attttattca taccacttac atcattattg tagtatgtac atatttattt    9060

cttttctttt cttttctttt ctttttgag acggagtctc gctctgtcac ccaggctgga    9120

gtgcaatggc accatatcag ctcactgcag catgcgcctc ctgggttcaa gcatttcttc    9180

cacctcagcc tcccaagtag ctgggataac aggcacccac caccatgcct ggctattttt    9240

ttttttccgt agagatgggg ttccaccatg ttggccaggc tggtcttgaa ctcctgacct    9300

ccagtgatct gcctgcctcg gcctcccaaa ttgctggtat tacaggtgtg agccaccgtg    9360
```

12

```
cccaggtggg agatagacat ttctctctac ctcaaacaga ggtccactca agctactttt    9420

cattttcttc ataaatatta gccgagtggc tattttgcac caggaatggt tccaggtgct    9480

gtggatatgg catcaggcaa aacagaccaa aaacttcctg ccgcgtggac ctcatgttcc    9540

ccaagtggaa gacaggcaat aaagagatag ataaatatgt agtaaattaa aaaaaaaaa    9600

aattagccgg gtgtggtggc ttgcacctgt agttccagct acttgggagg ctgaggtggg    9660

agaattgctt gagcccaaac gtttgaggct gcggtaagcc atgactgcac tgctgcactc    9720

cagacagcag cctgggtgac aaagcaagac gtttttgtca gaaagaaaaa aaaaagagac    9780

gaagggagga aggagagaga aaggaaggaa ggaaggagaa agaaaggaag gaaggagaaa    9840

gaaaggaagg aaggaaggag aaagaaagga agaaagagaa agaaagaaaa agaaagaaag    9900

aaagaagaaa gaaaagagag aggaaggaag gaaagaagga aaagagggaa aaaaatgact    9960

gttgaagagc agtgagtatt attataggag ggtaattata gggaggtatg gggaattgaa    10020

gacaggaaac acaaattagt ccaagcgaat ggatttctat tgggagtgat tctgccccta    10080

gaagacactg gcaataccag gagacatttt tggttgtcac aactatatgg aggggcatta    10140

ctggcaacta atggatagat gccaagtgtg ctgttcaaca tgctatgatg cacacggcag    10200

gcctccacaa caaaccatta tccagcttca gatgcccaca gtgcccagat cgaggaaccc    10260

tcatccaggg gctgagaacc gtattttgc agaagggagg tataaggatg ggttggtgga    10320

gaatggggaa ggaaggtgtg tgtccagtaa gagaaataag gcctgcacag gctggagggg    10380

agagtgagag agaaagggag gcggagagat acacgatgag ggagacaggc tggaacagaa    10440

agtagagacg aagattcgag atgtggagag gaagggtcac agaccccccc gaaatgatgt    10500

gtggacaaca ggaatctgga agaggaagat ggagtggaga gtgacaaatg gggtctaaag    10560

gttgaacttg gaggccaggc atggtggctc acgcctgtaa tcccaacact ttggaggctg    10620

aggtgggcga atcacttgag gccaggagtt cgagaccagc ctggccaaca tggtgaaacc    10680

ccgtctctac aaaaaaaata caaaaaatta gccgggtgtg gtgatggaca cctgtagtca    10740

cagctacttg ggaggctgag gcaggagaat tgcttgaacc cgggagatgg aggctgcagt    10800

gagctgaggt caggccactg cgctccaacc tgggcaacag agtaagactc catctcaaaa    10860

aaaaaaaagc tggatttgga gtgaaatatt aataacattc tccctctctc tccttttgcc    10920

tgtgtctcca tctctgtctt tttctgcatt tcttcatctc tgtactttcc atctctgtgt    10980

gtctgttccc atctgcttct ccatctatgg gcatctctgg gtctctcatg tctccttctg    11040

cccactttgc cacatctctg cctctctcat gcccccctttt ctctcctgca gggtgattct    11100

ggggggcctg tggtctgcaa tggctccctg cagggactcg tgtcctgggg agattaccct    11160

tgtgcccggc ccaacagacc gggtgtctac acgaacctct gcaagttcac caagtggatc    11220
```

13

caggaaacca tccaggccaa ctcctgagtc atcccaggac tcagcacacc ggcatcccca 11280

cctgctgcag ggacagccct gacactcctt tcagaccctc attccttccc agagatgttg 11340

agaatgttca tctctccagc ccctgacccc atgtctcctg gactcagggt ctgcttcccc 11400

cacattgggc tgaccgtgtc tctctagttg aaccctggga acaatttcca aaactgtcca 11460

gggcgggggt tgcgtctcaa tctccctggg gcactttcat cctcaagctc agggcccatc 11520

ccttctctgc agctctgacc caaatttagt cccagaaata aactgagaag 11570

<210> 14
<211> 293
<212> PRT
<213> Homo sapiens

<400> 14

Met Ala Thr Ala Arg Pro Pro Trp Met Trp Val Leu Cys Ala Leu Ile
1   5   10   15

Thr Ala Leu Leu Leu Gly Val Thr Glu His Val Leu Ala Asn Asn Asp
            20   25   30

Val Ser Cys Asp His Pro Ser Asn Thr Val Pro Ser Gly Ser Asn Gln
        35   40   45

Asp Leu Gly Ala Gly Ala Gly Glu Asp Ala Arg Ser Asp Asp Ser Ser
    50   55   60

Ser Arg Ile Ile Asn Gly Ser Asp Cys Asp Met His Thr Gln Pro Trp
65   70   75   80

Gln Ala Ala Leu Leu Leu Arg Pro Asn Gln Leu Tyr Cys Gly Ala Val
            85   90   95

Leu Val His Pro Gln Trp Leu Leu Thr Ala Ala His Cys Arg Lys Lys
            100   105   110

Val Phe Arg Val Arg Leu Gly His Tyr Ser Leu Ser Pro Val Tyr Glu
            115   120   125

Ser Gly Gln Gln Met Phe Gln Gly Val Lys Ser Ile Pro His Pro Gly
    130   135   140

Tyr Ser His Pro Gly His Ser Asn Asp Leu Met Leu Ile Lys Leu Asn
145   150   155   160

Arg Arg Ile Arg Pro Thr Lys Asp Val Arg Pro Ile Asn Val Ser Ser
            165   170   175

His Cys Pro Ser Ala Gly Thr Lys Cys Leu Val Ser Gly Trp Gly Thr
        180   185   190

Thr Lys Ser Pro Gln Val His Phe Pro Lys Val Leu Gln Cys Leu Asn
        195   200   205

```
Ile Ser Val Leu Ser Gln Lys Arg Cys Glu Asp Ala Tyr Pro Arg Gln
    210                 215             220

Ile Asp Asp Thr Met Phe Cys Ala Gly Asp Lys Ala Gly Arg Asp Ser
225                 230                 235                 240

Cys Gln Gly Asp Ser Gly Gly Pro Val Val Cys Asn Gly Ser Leu Gln
                245                 250                 255

Gly Leu Val Ser Trp Gly Asp Tyr Pro Cys Ala Arg Pro Asn Arg Pro
                260                 265                 270

Gly Val Tyr Thr Asn Leu Cys Lys Phe Thr Lys Trp Ile Gln Glu Thr
            275                 280                 285

Ile Gln Ala Asn Ser
    290
```

<210> 15
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 15
ggatgcttac ccgagacaga   20

<210> 16
<211> 22
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 16
gctggagaga gatgaacatt ct   22

<210> 17
<211> 21
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 17
ggtgatctgc gccctggtcc t   21

<210> 18
<211> 21
<212> DNA
<213> Artificial

<220>

<223> primer

<400> 18
aggtgtccgg tggaggtggc a   21

<210> 19
<211> 28
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 19
ccgagacgga ctctgaaaac tttcttcc   28

<210> 20
<211> 28
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 20
tgaaaacttt cttcctgcag tgggcggc   28

<210> 21
<211> 8622
<212> DNA
<213> Homo sapiens

<400> 21
cttgaaccca ggaggcagag gttgcagtga gctgagatcg cgccactgta cttcagcctg   60

ggtgtcagag caatactccg ttttggaaaa caaacaaaca aacaaacaaa caaaaaacag   120

atggagcaac tgagagaggt cttgtgactt gcccaaagtc acacacctca tcactaatca   180

cacctaatca ttgagatttg gacacacatg gttcagttcc agagtccatg ctccaaacca   240

tgacgacaca gtgagagaac attcaagggg agcccagacc cagcttcata accaggcctg   300

tgagcaggag aaagtggaag ggatcgtaag tgcccagggg aggcaaagat ggactctgcc   360

tgaggatctc agagatttcc tggaggaggg agaattgagg ttgggtgttg aaggatgagt   420

gggagttcac caggaaaaga aggatatgga gaaagacatt cactcattca atgaacatct   480

cctgaggact tctgcaagcc ctgttccgcc tggaacgggg tgatgctggg acacagagat   540

gagtcagacc tgggcccagc cctccagaag ctgtccacct ggtgagaagg aatgatgagg   600

agagaggcag ggaggatggg gtgatggaag ggacaatggg gtggggggca gggagatgga   660

tgaaaaaaat atatagcaaa tgttctcagg atttggcaaa gatcaggatg tattaagaga   720

gagcacaggg cacttgctac ctggaaggtt gggcacctgg gtccttgggt ggtggagccg   780

16

```
tggggaaggg ggcaggttat gacaagagtg ggttaatcca gatggaacca gatttctcaa      840

cattctagga gagggccttg tccttgtggg aagaggccca aatccccagg gcagggaagg      900

ttctgcaagg tgtgtaaacc tgtgcagctg cctgtggtct ctgcctcact ccacctggat      960

ttccctcaat ctttcccgtg ttctgtctcc tcctcccact cctcctctca tcttgggtcc     1020

ttctgtgcct gtacctccct ctctttgtat cttttgctct tgtgtctgag tcctgactct     1080

gtcttccacc cctcgcctcc tttctgggtg gtccccctgc acatccctcc agcctgccgt     1140

gggaggttgg tctctgcaca ccactgcttt atccaaaata aacctgctgc accccaggac     1200

cttaggcttc aaggatctcc ctccttttcc aggacacaaa agattctgta tcttgtagcc     1260

taaggtgatg aggaatgagg tctcccactc tgaagacccc agaggaggtg cccacaacct     1320

ctccacaccc ccagcactcc tcctccattc agtcaagctc tggcccagca agccgccagt     1380

tcatcccaaa aggggggtcc ccctgcactt acctcctctc ccaaggcccc tgtcacagcc     1440

ccagggcttc cccctccccc aggtacattt cccaaccccg attaatcaca ggggcggccc     1500

catggaggag gaaggagatg gcatggctta ccataaagaa gcactggacg ccgggtgcac     1560

gttccaggat ccaggtgccc aggggtcatg aagctgggac tcctctgtgc tctgctctct     1620

ctgctggcag gtgaggctcc caggctggct gccccttcac ggctgtacta aggtcacctt     1680

gctcttccct cccatcccag gcttctgcct cctgccctct aggcttctca gcatcctctc     1740

cctgccctcc cagcctgctc ttcgctgacc cctttgtccc tcatccccac cccagggcat     1800

ggctgggcag acacccgtgc catcggggcc gaggaatgtc gccccaactc ccagccttgg     1860

caggccggcc tcttccacct tactcggctc ttctgtgggg cgaccctcat cagtgaccgc     1920

tggctgctca cagctgccca ctgccgcaag ccgtgagtga cccaggctgg ccatgctggg     1980

gagggacaga ggctgggggt caggagaggg tgaggggtgc tttaggccag aagtgcggag     2040

cctccacttc tgataccaca agttcaactc ttagaagtag gaagggtagc ctcccaaatc     2100

ctaaaattct agagaccagc aatatctcat ttgagaagtc taagattcga aacttaggct     2160

cttcgaatcc gagactgacc cagagaaatc cagaatcgta gaatcctaaa atcttgaatt     2220

tatgaaattc tgcaatagcc tcagcaaatt ttagaatcat agattcgcag actattagaa     2280

tcttagcagt ctgggtcagc actgcccaga ggaattatga tgccagccac atgtgtaagt     2340

ttaaatttct ggtggacaca tttaaaaaat aaggaatgag taaaattaat tctaatagat     2400

ttaacttgac atacccaaaa acttattttg acatgtaatc aatttttaaa tacgtatgaa     2460

cgatacagtt tacttttgtt ttggtactaa gcctttgaaa tctgttctgt attttacaca     2520

catagcctgt tacaaaatgg actagccaca tttcaagtgt tcaatagcca taatggctag     2580
```

17

```
tgtgatccta gaatcttaaa ttcagagctt tctagattca ttgaatattg aaactcacag    2640

tactagaatc tttgattcac agtatcctag aatattgaga ttcagataat tctgtagtct    2700

taaactattt gaatcccaga ctcttaaatt tctaaggtta tagatttata gaatgatgac    2760

attctagtct ttcttttttt tttttttttt ttttttgag acagagtctc cctctatctc    2820

ccaggctgga gtgcagtggc acaatctcag ctcactgcaa cctctgcctc tcgggttcaa    2880

gcaattctcc tgcctcagcc tcctgagtag ctgggattac aggtatgcac caccatgcca    2940

ggctattttt tttttttttt tttttttagt agagacgggg gtttcaccat attggccagg    3000

ctggtcttga actcctgacc ttgtgatctg cccgcctcgg cctcccaaag tgctgggatt    3060

acaggcgtga gccaccgcgc ccagccaaaa ttctagtctt tttgtcctag aacattaaaa    3120

ttctatgttc aaatcttaga tttaattcag ataatgttag aatcctggag ttttttttgat    3180

ccaggggaat ctggaatgtt agaatcttgg attcataaaa ctctaaacct tgagcctcta    3240

gattctagaa tcatggataa tagtgtgtcg gaatctgaga attctagaat cttaggttct    3300

gggcattcta atagtatcct ggaatccacc tgatgcagga atcctctctc cattgcctct    3360

gaaaagtgac catccatact gttccaattt tcttccctcc atgagtaaag cactgattgt    3420

ggtaagagat gctgtgtggg aatttcccat catgcattgc tccatgatgg aacctccttt    3480

aacttaagcc tatacatcag actgggagaa cgatgttcag atttcagccg aaagtgaagc    3540

aggagaaatg cagagatatg aaggtggaag agagtgagag gcaggggaag ggtaggggga    3600

tgaagggatg tagggtgag gactactttt ccagatccag agccaagaca gcaagaatga    3660

cagagagaga cagacacaga tgtttctggt tccccaaccc tgaattcgca gtcattagcc    3720

tgctgcctaa tgtcagaggt cagaggctgg ggaatggact tgtcatcccc gaaaggatcc    3780

cagctgtcta gggcatggac cagaaatgaa acaagtgcgc tgagactgtg gtgagggctt    3840

aaggttagac accaggaaga catgcattga agggtgaagg atatgataga caggaaaagc    3900

tgaggccaga gatgaccccc aatttgggga ttttccatat cccatccct ttcatacaca    3960

cgcacacgta tacacacaca ccacttagac atacagagcc gctcccacag aagccaccag    4020

acctgtgggg gcaggggtgg ggcggttgtt atgtggtagg tggggtcccc cgtgcccaca    4080

ccgttcctag ggacccaagt caccaccaag gctccaggtg agtagggagg aaggtggctc    4140

actcagcctg ggactaggag cgggggcttt gtggggagag ctacaaagat ggagacacac    4200

aaaacatcag agtggggacc agggacccag aggaggtgtg tgcctcgctt aaaatcacag    4260

taccctgggc cagacataga tgatgagggt gcagagaggg tgtgtggctt gcagagggtc    4320

acacagcacc ctgatggaca ggaaaagagg gctggggctg aaaggacttt tacctttccc    4380

ccagcttgac ctctgaggcc tgtcccagca ggtatctgtg ggtccgcctt ggagagcacc    4440
```

18

```
acctctggaa atgggagggt ccggagcagc tgttccgggt tacggacttc ttcccccacc    4500

ctggcttcaa caaggacctc agcgccaatg accacaatga tgacatcatg ctgatccgcc    4560

tgcccaggca ggcacgtctg agtcctgctg tgcagcccct caacctcagc cagacctgtg    4620

tctccccagg catgcagtgt ctcatctcag gctggggggc cgtgtccagc cccaagggta    4680

tgacctggcc cagaactctc tctgaaactt gctccctcac ccctctgtct ctgccttttc    4740

atctctgtct tctccttttc tctctcctct ctctctctgt cagtctatct atctgccaat    4800

cgatatattt aaccaaatat aagatgctag catttttaag atgtgccatt atttcatgaa    4860

ctgcgaagaa gtggaagaag gaggaggagg agaagaaaaa aaggaggagg aggaaagatc    4920

ccattagatc ccattgatta tataacacca ttttctggaa gacacattct aatttcagag    4980

tgtttgtttg tttgtttgtt tgtttgtttt tgagacaggg tctcgctttg ttgctcaggc    5040

tggagtgcag cggtgtgatc acggctcatt gcagctttga actcctgggc tcaagtgatc    5100

ctctcgcctc aacctcccaa gtagctggga ttacagatat gcaccaccac atcccacacc    5160

ggggtcattt ttttattatt tattattatt attattatta tcttttttttt tgtattttta    5220

gtagagacag aggtttcacc atattggcca ggctggtctc aaattcctga cctggtgatc    5280

tgcccgcctt ggactcccaa agtgctggga aaacaggcat gagccactgc acccagccaa    5340

aattctagtc tttttttaaat ctagtcatat cttagattta attcagataa tgttagaatc    5400

ctggagtttt ttgatccagg ggaatctgga atgttagaat cttggattca taaaactcta    5460

aacgttgagc ctctagattc tagaatcatg gatactagtg tgtcagaatc tgagaattct    5520

agaatcttag attctgggca ttctaatagt atcctggaat ccacctgatg caggaatcct    5580

ctctccattg cctctgaaaa gtgaccatcc atactgttcc aattttcttc cctccatgaa    5640

taaagcactg attctggtaa aagatgctgg gtgggaattt cccatcatgc attgctccat    5700

gatgggacct cctttaactt aagccttatg ctaaaaattt ttattatttt tagcaaagat    5760

gaggtcttgc tatgttgtcc aggctagtct caaactcctg gcctcccaaa gtgctgagat    5820

tacaagtgtg agccactgta cctggcccag agatgtttaa atgtgaaatg cgttcatctt    5880

agaatgggaa taagaccatg tctctcagag tcacggatca ctgacccatt agccaaattg    5940

ggtcagtgga ttggaaaaac agtctgaatt tgttgctgcc aatatctaaa acttggaaag    6000

ttttatacaa aagccaggtt tctggattca cctgaaaaag tttgaagaac tcacattccc    6060

aaaatagcaa gcattgggct gagtcaatgg aggctgcccc cttcagccaa gataagttct    6120

ctgattcact ccaatggacc caaatggctc ctgtctccct gcacagcccc cgtccccgac    6180

ttctgtttac caattctgtt tatcatatcc cttgatgcat cggagcctgc acccatgtct    6240
```

19

```
tatatagatg cacatgtgta ttatatatcc atatccacat ctatactgac tacactgtat    6300

ctggtatctc tgtctatgtc tctgtctcca tcagtgacca tcttcctgca aatctctttc    6360

cttttatctc actgccttca ttccacccct tgaggtctgg gtcttttct atttctttt    6420

tttttttttt taagagactg agtcttgctc ttgttgccca ggctggagtg cagtggtgtg    6480

atctcggctc actgcaacct ccacctcctg ggttttaagt gatcctcctg cctcagcctc    6540

ccgagtagct gggactacag gtgtgcaaca gcatgcccag ctgattttt gtattttcag    6600

tagagacgga gtttcaccat gttggccagg atggtctcaa tctcttgacc ttgtgatccg    6660

cccgcctcag cctcccaaag tgctagggag ttatatatgc atctcctctt atctcttggc    6720

tctctgcatg catctttctg tttctcttcc ttcctttctt tttttttttt tttttttttt    6780

tttttttttt tttttttgaga cggagtcttg ctctgtctcc caggctggag tgcagtgacc    6840

agtctcggct cactgcaacc tccacctccc aggttcaagt gattctcgtg cctcagcctc    6900

ccgagtagct gggattacag gcgcctgcca ccatgcctgg ctaattttg tatatttagc    6960

agagatgggg tttcaccatg ttggctgggc tggtctcaaa ctcctgacct caagcgatcc    7020

gccggcctcg gcctccaaaa cactgggatt acaggcatga gccacggtgc ccggccagcc    7080

tctctctcta cttggccctc ttcctccttg tctccatttg tttctcttgt gtgctatgac    7140

tgtctgtctg tcactgtctc ttgtctctat ctttgagagt cctaaatgtg gctccattgg    7200

tcctttggaa aagctgcagg gaggactcag ggcagtgggg tgctgagtgt gttggagaca    7260

gttgcagatc cttgacagtt ctcttccctg acagcgctgt ttccagtcac actgcagtgt    7320

gccaacatca gcatcctgga gaacaaactc tgtcactggg cataccctgg acacatctcg    7380

gacagcatgc tctgtgcggg cctgtgggag gggggccgag gttcctgcca ggtgagacct    7440

tactctgggg aaaatgaggc tgtcctgcca agttttctag gatttagggg agcagagggg    7500

tcggccccca gccttcctgg gtcaaaatga gaaggagact gggatacctg gttcctggga    7560

gaggacggga ccagggcctg gactccttag tgtaaaagag aaaaggtctg gaggtccaga    7620

cttctggatc tacaggagga gtgggctggg cgtccagagt ctgagtcctc ggggaggagg    7680

aggttaggtc ctgcggggag gtgggccctc tgagctttta ctcctgggtc tgaggaagaa    7740

gaggctggag atggaggact ctcggatgtt ggaggaggaa ggggctgggg cctttctggg    7800

agggaggaag tggcccgtgt aattgtcatg aacagagtgg cctaacagtt cctctgccct    7860

tctctcgcgt acagggtgac tctgggggcc ccctggtttg caatggaacc ttggcaggcg    7920

tggtgtctgg gggtgctgag ccctgctcca gaccccggcg ccccgcagtc tacaccagcg    7980

tatgccacta ccttgactgg atccaagaaa tcatggagaa ctgagcccgc gcgccacggg    8040

ggcaccttgg aagaccaaga gaggccgaag ggcacggggt aggggttct cgtagggtcc    8100
```

20

```
cagcctcaat ggttcccgcc ctggacctcc agctgccctg actcccctct ggacactaag   8160

actccgcccc tgaggctccg cccctcacg aggtcaagca agacacagtc gcgcccctc     8220

ggaacggagc agggacacgc ccttcagagc ccgtctctat gacgtcaccg acagccatca   8280

cctccttctt ggaacagcac agcctgtggc tccgccccaa ggaaccactt acacaaaata   8340

gctccgcccc tcggaacttt gcccagtggg acttcccctc gggactccac cccttgtggc   8400

cccgcctcct tcaccagaga tctcgcccct cgtgatgtca ggggcgcagt agctccgccc   8460

acgtggagct cgggcggtgt agagctcagc cccttgtggc cccgtcctgg gcgtgtgctg   8520

ggtttgaatc ctggcggaga cctggggggga aattgaggga gggtctggat acctttagag   8580

ccaatgcaac ggatgatttt tcagtaaacg cgggaaacct ca                      8622
```

<210> 22
<211> 296
<212> PRT
<213> Homo sapiens

<400> 22

```
Val His Phe Pro Thr Pro Ile Asn His Arg Gly Gly Pro Met Glu Glu
1               5                   10                  15

Glu Gly Asp Gly Met Ala Tyr His Lys Glu Ala Leu Asp Ala Gly Cys
            20                  25                  30

Thr Phe Gln Asp Pro Ala Cys Ser Ser Leu Thr Pro Leu Ser Leu Ile
        35                  40                  45

Pro Thr Pro Gly His Gly Trp Ala Asp Thr Arg Ala Ile Gly Ala Glu
    50                  55                  60

Glu Cys Arg Pro Asn Ser Gln Pro Trp Gln Ala Gly Leu Phe His Leu
65                  70                  75                  80

Thr Arg Leu Phe Cys Gly Ala Thr Leu Ile Ser Asp Arg Trp Leu Leu
                85                  90                  95

Thr Ala Ala His Cys Arg Lys Pro Leu Thr Ser Glu Ala Cys Pro Ser
                100                 105                 110

Arg Tyr Leu Trp Val Arg Leu Gly Glu His His Leu Trp Lys Trp Glu
        115                 120                 125

Gly Pro Glu Gln Leu Phe Arg Val Thr Asp Phe Phe Pro His Pro Gly
    130                 135                 140

Phe Asn Lys Asp Leu Ser Ala Asn Asp His Asn Asp Asp Ile Met Leu
145                 150                 155                 160

Ile Arg Leu Pro Arg Gln Ala Arg Leu Ser Pro Ala Val Gln Pro Leu
                165                 170                 175
```

```
Asn Leu Ser Gln Thr Cys Val Ser Pro Gly Met Gln Cys Leu Ile Ser
            180             185             190

Gly Trp Gly Ala Val Ser Ser Pro Lys Ala Leu Phe Pro Val Thr Leu
        195             200             205

Gln Cys Ala Asn Ile Ser Ile Leu Glu Asn Lys Leu Cys His Trp Ala
    210             215             220

Tyr Pro Gly His Ile Ser Asp Ser Met Leu Cys Ala Gly Leu Trp Glu
225             230             235             240

Gly Gly Arg Gly Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys
            245             250             255

Asn Gly Thr Leu Ala Gly Val Val Ser Gly Gly Ala Glu Pro Cys Ser
        260             265             270

Arg Pro Arg Arg Pro Ala Val Tyr Thr Ser Val Cys His Tyr Leu Asp
        275             280             285

Trp Ile Gln Glu Ile Met Glu Asn
    290             295


<210>  23
<211>  250
<212>  PRT
<213>  Homo sapiens

<400>  23

Met Lys Leu Gly Leu Leu Cys Ala Leu Leu Ser Leu Leu Ala Gly His
1             5               10              15

Gly Trp Ala Asp Thr Arg Ala Ile Gly Ala Glu Glu Cys Arg Pro Asn
        20              25              30

Ser Gln Pro Trp Gln Ala Gly Leu Phe His Leu Thr Arg Leu Phe Cys
        35              40              45

Gly Ala Thr Leu Ile Ser Asp Arg Trp Leu Leu Thr Ala Ala His Cys
    50              55              60

Arg Lys Pro Tyr Leu Trp Val Arg Leu Gly Glu His His Leu Trp Lys
65              70              75              80

Trp Glu Gly Pro Glu Gln Leu Phe Arg Val Thr Asp Phe Phe Pro His
            85              90              95

Pro Gly Phe Asn Lys Asp Leu Ser Ala Asn Asp His Asn Asp Asp Ile
        100             105             110

Met Leu Ile Arg Leu Pro Arg Gln Ala Arg Leu Ser Pro Ala Val Gln
        115             120             125

Pro Leu Asn Leu Ser Gln Thr Cys Val Ser Pro Gly Met Gln Cys Leu
        130             135             140

Ile Ser Gly Trp Gly Ala Val Ser Ser Pro Lys Ala Leu Phe Pro Val
145             150             155             160
```

22

```
Thr Leu Gln Cys Ala Asn Ile Ser Ile Leu Glu Asn Lys Leu Cys His
              165                   170                   175

Trp Ala Tyr Pro Gly His Ile Ser Asp Ser Met Leu Cys Ala Gly Leu
              180                   185                   190

Trp Glu Gly Gly Arg Gly Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu
          195                   200                   205

Val Cys Asn Gly Thr Leu Ala Gly Val Val Ser Gly Gly Ala Glu Pro
      210                   215                   220

Cys Ser Arg Pro Arg Arg Pro Ala Val Tyr Thr Ser Val Cys His Tyr
225                   230                   235                   240

Leu Asp Trp Ile Gln Glu Ile Met Glu Asn
              245                   250


<210>  24
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  24
catgcagtgt ctcatctcag                                            20


<210>  25
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  25
catggaggag gaaggagatg                                            20


<210>  26
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  26
cttcggcctc tcttggtctt                                            20


<210>  27
<211>  21
<212>  DNA
<213>  Artificial
```

<220>
<223> primer

<400> 27
gaccctgaca ttggacatct a   21

<210> 28
<211> 21
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 28
gccactgcct gatggagact g   21

<210> 29
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 29
aacatcagca tcctggagaa   20

<210> 30
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 30
cttcggcctc tcttggtctt   20

<210> 31
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 31
gggtcagagc tgcagagaag   20

<210> 32
<211> 20
<212> DNA
<213> Artificial

<220>

<223> primer

<400> 32
gggcctgtcg tctgcaatgg   20

<210> 33
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 33
atggccacag caggaaatcc   20

<210> 34
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 34
ggtcacttgt ctgcgcagac   20

<210> 35
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 35
cccaaccctg tgtttttctc   20

<210> 36
<211> 17
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 36
ggccctcctc cctcaga   17

<210> 37
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

25

<400> 37
atccctccat tcccatcttt   20

<210> 38
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 38
cacatacaat tctctggttc   20

<210> 39
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 39
agtgacactg tctcagaatt   20

<210> 40
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 40
ccccaatctc accagtgcac   20

<210> 41
<211> 19
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 41
gcttccctac cgctgtgct   19

<210> 42
<211> 19
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 42
cactctggca agggtcctg   19

<210> 43
<211> 10080
<212> DNA
<213> Homo sapiens

<400> 43
caggaggttg cacactgttc ctcccacctc gccactgcac ccccaccaag gatggaattg   60

gaggcggggg gcagattcca gggtcagggc tgtcaagagt gaatgaggcg aggagacatt   120

caggagcaga gaggtttcag acgcggaggt tccgggcacg ccctcaacac ccccttcacc   180

ttctcctcag gccccgcccg ccctgccctc ccctcccgat cccggagcca tgtggcccct   240

ggccctagtg atcgcctccc tgaccttggc cttgtcagga ggtaagaatg cgcgggggtg   300

gaggcgcggc ggccattcgg dacaatggta ggaggggtca ggccggaggg ggaggggcg   360

tgggagccgc gagctccgcc ccccgcccac tcggggccgg gtccagtggg dacagctcag   420

agctcttcct gcttgtccct gggtgacctg gtttcccggc tgaggttggc cctccgaccc   480

cagacccttc acctcccaaa ataccctcgc agcagcccct cccgcgttca aggcttcctg   540

tcctctctgg aaagctgaaa gacatgggtt cgcgtcctga cgctgccgct ttgagccagt   600

agcctagcag ctgctttgtg cctaaattgt tttcatctgg aaaatgggct taatctataa   660

gtgcttacca gagaaggtca ctgtgaatat tgaaacgagg taatgcgtcg agccttcagt   720

atgtcgcagg tagaagggac ttgaaagtta gccacttagc cgttattact ttattagtag   780

tattcctttt tttttttttt tttttttttg agatggaacc ttgctctgtc tcccaggctg   840

gaaggcagtg gcacgatctt ggcttactga aacctccgcc tcccgggttg aagcgattct   900

cctgcctcag cctcccgagt agctgggatt acaggcgccc gccaccacgc ccaactaatt   960

tttgtatttt cagcagagac ggggtttcgc catgttggtt aggctggtct cgaacttcta   1020

acttcaagta gcccgcgtca gcctcccaaa gtgccaggat tacaggcatg agccaccgag   1080

cccggcctct agtattctgt cttcatactc agccccttcc agaaccttct agattgttat   1140

tttaatcctt gggttgaccc caaacctatg tgacctcacc ccaaattggt agtccttaag   1200

atccttatgg atctttccca tctttccctg ccgttgtagg caggttctct ggaaaccccg   1260

ttcatgaatc atttattcat tcaacaaaca gctattaaac accggccact gtgctgggtg   1320

ctgtacaagc agagacacag tccctgctct cagcacctgg agtctagcgg gacagacgc   1380

agatgttatt caaacaatta tccaaataat tagttaataa ttatcttgac atgaggtgaa   1440

gacttcaagg agccaagcca ggggcctaga gatgtaatgg cggcttcccg accagaggcc   1500

ttcccaaagg gcttgaccct tgagccaaga cctgaaaaag gagggatctg tgggtgcctg   1560

27

```
gcacctggca ccatccttgg cctgaaggtg gggtggcttt tctcctctgg cgacactccc   1620

tggattcatg cccgtgccac tcctgagtgc cacaccctag gctaggagac ccacacgcta   1680

cgccttgtgg agtcctcaac aacctggcga ggtaggtgca ttgtaattac tccaatttca   1740

tggcagagaa acctaggact caaagacaga aggctcctgc tccaatgaca ccggcgatgc   1800

ctgagtcaga atcctaatca aggttgtttt ccctgtccat atcctggact tgaggctctg   1860

aaaaccattt ttataacttt tgacctaatc atttgcttaa agttagcttt ttttcttctt   1920

ttttcactca aacaaaagca tgttcaactt tatattactg tcctgaatag agaatagaat   1980

tctttgtcat aaatagaagg taaggaagga aataaatcct gcacaatgaa aagaaaataa   2040

tatgtttatt gggttggacc acctgaaatt gctgatactt gaccctttt gaccttccta    2100

aaacaacttt tgcagatggt tcagtgtaat aaatgttagg tggcctgatg aggcttctgt   2160

gtcctcctgg ctttgaaaag tgagctcagt gaggattagg gaggtgttaa aaccatatta   2220

gcaccatcct gagactttat ccttgacaaa atcaggttta aaagagaact ggatgctggt   2280

tcagcgtctg agtgtgcgat ttaacgttac ttaaatctca tctctctacc atctaaaatg   2340

atcctgtgct caccgacaac ttctgtccct aactgcaaac cactgagcta atccaactgc   2400

ttgccctgta gttggggaaa ctagctaggg aggcagaggg acctcctgtt gtagctaata   2460

attaataata acatttccca ctgactgagt gctctccatg ccacctgctg tgctgcacgg   2520

tttgaaatgc aggatcatct tgaattcttc aactgcgcaa tgagagatga actattactt   2580

tttctacttg acagctgggg aaactgaggc tggtgatttg cataaggtca cacagtcaca   2640

aaatggcatg catgttcagg attggattct ccctgtccca cggacccctg ctgtgctttc   2700

aatgccagac acagtgcctg gcacacacag catttattta ttgagccccc attgtgtgcc   2760

aggcgctgtg ttaggtcctg ggaatatggt actgaataaa gcagttaagg tgcctgttgt   2820

caatggagct tacagtcaaa gtggagagat ttttaaaaac gaatacatac aaatgtgaag   2880

agaaatgaat agcaatcatt gttctgatga agaccaactg gaagaatgta atgggggagg   2940

agtcgggacc aggagagtca acattagacc aggtggtcag ggaaggcctt tctgaagagg   3000

agacatttga gctgacctct cagaattaag aaggacccag acatacaacc tctaaattct   3060

gagggtcatc cagtagaata ttccatatat gtatatatga aatatcctat atctgtgctg   3120

tccaattatc cactagcccc ttcaggctat tgaacatttg aaatatggct ggtgtgactt   3180

aagaactgaa tttttaattt agttttactt cattttaatt agtttaaatt taaatagcca   3240

catgtagcta gtggctacca tattaaacaa cataggtctg gagaaaggac tgtgcagaga   3300

gaggaaatag caagtataaa atgtctagta tgggggcatc caagatgatt taaattcttc   3360
```

28

```
ttttctttaa atgcctggtg tgtttgaaga acaggcccat gaggctggac tagaggaagt    3420

cagaagaaag aggttggaga tggggtcaaa gaggctggca agggccagac agcacagagt    3480

cctgcacacc ttgggaaggc tttttggatt ttattttaaa gaaagttgag cctgggaaca    3540

acatctgact ttctttgttt gaagagtcct cagcctactt tgagaagact ggatcggagg    3600

gatgtaaaag tggaaggatt taggttaatg ttgtagtcat ttgggctaca gaagatgggg    3660

catggaccaa gatggtggca gaagtgtgga gataactgga tatttgggag ataaaaccaa    3720

taggaactgg ttgtgagtga tgaaggaaag aagagaagca aagatgactc ccaggtttgg    3780

ggctgagcac tgaggtggga aatactggag cgaacagttt tgattgagaa gaatcaagtt    3840

gggaatacaa agcttaagat gcctgtaagg catccaaatc aacagtgttt gagttttgag    3900

cttaaagaag agttcagggc tggagatgat tagcctatag ctggtattta aagccatgga    3960

ggcaaccagt atatatgcag tgaaaggata gagagatggg tggaaagatg attggatgga    4020

tgcatggatg gatatatgga tagatggatg gatggatggt tggattggat ggatggatgg    4080

atggatggat ggatggatgg atggatggat ggatgaataa atggaccagt ggatggaggg    4140

acagatgagt ggatggatgg ttggatggat ggatggatgg atggatggat agatggttag    4200

atgactacct aaatggatga atggatagat ggatgagtag acggatggac aaatcaatag    4260

gatgaatggg ggatggatga ttggatagat tgatggatag atattgccta ggtggatgtg    4320

taggtcagtc tcacttctac ctcctgaaat ccatcttctg gtagaatgat ataaaaaatg    4380

catgtggaga gaaagtcagg ctcctgctta cctatcagca acatcctcat tttgtgaact    4440

cttctgttaa cccccagtgg aggatttggt acttcctgag aaaataatgt cacccctttg    4500

ccctaattca tctccacttg gtcaagaata gcaactgcca taggtcggca aattcatctt    4560

cagttcctgg tcacccaggg caataatccg acccttaccc caaacccaga aaccacaacc    4620

ccagggctcc tctgcccect ggatcccagt tttctaacaa tctctcttct ttaccaggtg    4680

tctcccagga gtcttccaag gttctcaaca ccaatgggac cagtgggttt ctcccaggtg    4740

gctacacctg cttcccccac tctcagccct ggcaggctgc cctactagtg caagggcggc    4800

tactctgtgg gggagtcctg gtccacccca aatgggtcct cactgccgca cactgtctaa    4860

aggagtatgt gggggccggg ggagcatggg gtagggatga gaatgggact gggattgtgg    4920

atggggtaga gttggatttg aggatggagt tggagttagg gttggggatg gacatgggag    4980

tgagaatgag gtttggggtt gagatatggg gattgggtat gggaatagaa tcaaagtagg    5040

ggatttggat gggattgaag ttgaggatgg gggagatgta tttggagatg aggaaggtag    5100

gatggagaag aagttaggtt ggggatggga agaggttggg gctgggatgg ggatggaaat    5160

gggctcatct tctttcctaa ccaccttctt tctgcaccca caggggggctc aaagtttacc    5220
```

29

```
taggcaagca cgccctaggg cgtgtggaag ctggtgagca ggtgagggaa gttgtccact    5280

ctatccccca ccctgaatac cggagaagcc ccacccacct gaaccacgac catgacatca    5340

tgcttctgga gctgcagtcc ccggtccagc tcacaggcta catccaaacc ctgccccttt    5400

cccacaacaa ccgcctaacc cctggcacca cctgtcgggt gtctggctgg ggcaccacca    5460

ccagccccca gggtatgcac ccacacaggt ggcctgaggc cccataggag tggctgggga    5520

aacaggggca gagatgggag ggaaggtctg aggtaggttc ctttatatat aaaaatataa    5580

ataagtaaat aaatatatat atttaaagtt agctgtatcc tttatataaa tataaattca    5640

tgaatatata aaaatatgag tatataaatt catgaatata tagaaatata aatagatcta    5700

atatatgaat atattatatg atgtatatta tgtattatat agtaatataa ttatatatta    5760

tacaaaaagt atacaaatta aatgtatttt ataaattata aaatttatca attatgtatt    5820

ttaaatatgt atttctgcat aatgtatata ttatatataa tctatattta aattatatat    5880

tataaatgta ttttataaat gtatacattt atatatttat atactgtaaa tgaattttat    5940

catttataat atataaatca tacatataaa atgtttatat ttctataatt tataaaatgt    6000

ttaatatatt aaatatggtt attaatgaaa tgtctaataa ttcaatgtaa taattaattc    6060

tatatcatta cttagtaagt ataatacatt atatatgtga atataaagtt gatgtatata    6120

ccgacaagag ccctttgcat ctccctagca atccctgact ctctcccagc ctcatgtttg    6180

tatctttctc ctcaacatgc cctgtctctc ttcctaccat tctatccaac tctcccgtaa    6240

ctcttcccat ccctgttcct gctttttccca tctttaattc tctatttctg accatctccc    6300

tattccaact ccctctctcc aactttctct ccccaccgct ggctccacca ctctccttat    6360

caaccttcca ttctcttgtc ccttccctcc ttgtccttcc ctccactttt ctcctcatct    6420

ctcccttcgc ctctctccca tgtccctcca tatttctgtc acttccgttg ctttacccag    6480

ataggtgctc atctcttctc ccatctttct cttcccatct caattttcta tctactcttt    6540

acccattcaa ctcgcctatt tcaccttcat cccatatcct atccaggtcg gataccttag    6600

accttctctt tcttctcccc agtgaattac cccaaaactc tacaatgtgc caacatccaa    6660

cttcgctcag atgaggagtg tcgtcaagtc tacccaggaa agatcactga caacatgttg    6720

tgtgccggca caaagagggg tggcaaagac tcctgtgagg tgaggccggg aggctggtgg    6780

gtgccttgga caggatagaa agccagaatg gaagtgacag atgctgggga aaaagctttg    6840

tttccagcct taggggaacc aatctttata agatacaatg tcccctcaca taggaggtca    6900

agacaaaaag gggtacccag ggatggcagg aataattcat cataagcccc agctttgact    6960

gagtggctgc caagatccct gtgttgagat gcataaaggt tggtattctt tcacttgtga    7020
```

30

```
gtgatagaca accaactcaa actggcttaa acaaaatgca ggctttgta actgaaaatc      7080

caggttgtct ggctttaggc acagatggat ccaggtatgc aaattgtgtg tttggaattc      7140

tgtctttctt ttaactctca gctcttcttt attctgtttt ggcttcattc tcggttagat      7200

tcttcccatg acaagatggc cccagcagct ttgagcttac atcctaccct ctaggcaacc      7260

ctattagaaa gagaacctct cttttccaat agttcacaca aaagtcttaa gcatgattct      7320

cactaggctg acctaagtca tgtgtcttga gccatcactc caccagagct gtgggattct      7380

ctgatgggcc aagcctgagt cacatagtta actgtgggtg ctggagaggg gcagggacaa      7440

actgcatgga ttggaagtgg agaagggcag ttccccaaat gaaaaaatca ggagaggctg      7500

ttaccaaaat aaggggaaat ggccaagtac agtagttcat gcctgtaatc ccagcacttt      7560

gggaggctga ggtgagagga ttacttgagc ccaggagttt gagaccagcc tgggcaacat      7620

agtgagactc tgtctctaca aaaagaaaaa aaagttttta aattagccag gtgtggtgga      7680

gtacaactgc agtcctagtt actcgggagg ctgaggcaga aggactattt gaacccagga      7740

gttcaaggct gcagtgaggt atgatcatgc cactgcactc cagcctgggt gatagagcaa      7800

ggccctgtct ctaaaacaaa aagaaataaa tagagcaaga cactgtctct aataaataaa      7860

taaataaaaa tttaaaaatg aatgtttaat tttttaaaaa taagaggaaa tggatactac      7920

atgagcaaaa aatagccttc atcaataaag aagttgagat tggattcagt gagaaagagt      7980

atgatactat attaatgata tgtgccttga tcgattagtg atgtctgcct tgggcccagg      8040

aagagaaata gacttacacg tgtgttgcat accctgccca gatatgaatg ggttcactca      8100

atagtgagag acacaaatga gccttaaata ggagcagggt cagctggtgt ggggcagggg      8160

gtgatttagt accagggaaa caaaaatggg tatgaagtaa gttgttacca ttttaatgaa      8220

actgaggaac agagaaaaac acagaaattt ctctgtgtct ctctttctct gggcctatct      8280

ctgtctttct gtccctattt ctgtctcttg ctgtctgtcc ctctgtgttt gtcttcttgt      8340

ctgtttctca ctgtcttcat tgctttctct cacactgtgt gtgtctgact ctgcctctct      8400

gagtctcctt ctctgtgtgt gtctctctcc atctttcact ctctccccac acctccctgt      8460

ccctgccttg tttagcccca gcaaggaccc acctctctct ctctttcttt ccccaactca      8520

gggtgactct gggggccccc tggtctgtaa cagaacactg tatggcatcg tctcctgggg      8580

agacttccca tgtgggcaac ctgaccggcc tggtgtctac acccgtgtct caagatacgt      8640

cctgtggatc cgtgaaacaa tccgaaaata tgaaacccag cagcaaaaat ggttgaaggg      8700

cccacaataa aagttgagaa atgtaccggc ttccatcctg tcaccatgac ttcctcacat      8760

ggtctgctta gcccttctct gctccttatt cccagtgttc catttgaacc agtgatccat      8820

gtcctgaaaa atgctcaatc tcagctaaca ttccatgttt cagaagcatt caggcactgc      8880
```

31

```
caggcttgca gtctcccaga tgttgcatcc ctgaaacatc tcaacaacct gaatgtccca      8940

acccagacaa tggcccaggt ctctcaactt catcagtgtg gcttctatga gcccagatca      9000

ccacctgaac gttctgtctg tggcacattc ttaaatattt ccatcagccc atctcaacaa      9060

tatatgtcct ataaatggac catccttgac aacatcctct aactcttcaa gtatttattc      9120

aatgccagta tcctagacct tctatttttt gcactcaaga aggctctaga ctcccatgat      9180

agttcatcct gaaaatattc tcttatgccc acaatcttct gccctgacaa cattctgtgt      9240

acctctgtga ctcaccacag ctaacattgg atcctcagaa tatttcattc tcacactgtt      9300

atgggtgtct cagaagtccc aacccaacct acatcccaca ttcttccaat accccacctc      9360

tgccaacatt ccctctctga atcaatggca ccctagtctc tagagttata gggttcagta      9420

taccaaaggg tcttcttgcc tgaactttat tgtctaccaa atattccgtc ttgtatcccc      9480

tccatgaaca tccttggtca gtgtcccttg ctgttacatc tttgtgcatg accctaaaat      9540

gtagtgcaaa tccttgcttt ggacaagtta taaaactcac agtctctgtg ctttctcatc      9600

tgtaaaatgg gttcataatt ttttttaatt gtaacattat tacaagaata aatgtcaagc      9660

atttatcact attattattt gcatggttcc cataaaatat taccttagaa tgttaataac      9720

agcccttcga atttgcagag tgtccaaaaa aagtgttgca ctgatttatt ttcctcagga      9780

gacatttctt cagtgttgac tatgtgcaag cactctcctg ggtgttgtta aatatagttt      9840

atttactcaa caaatatttg tacctatcaa gagccaggca ctgttgcaga gacaagtgat      9900

aaccaatgag ttaaacagat aaaaacttct gcccttgtag aacttacatt cttttcaaga      9960

agtctccata acaatgaata aagaaatagg ctgtcaggtg gtgctgcaag ccatagcaag     10020

aaatgaaaca agggccatat gtggtagctc atgcctgtaa taccaacact gggaggccaa     10080
```

<210> 44
<211> 256
<212> PRT
<213> Homo sapiens

<400> 44

```
Glu Ser Ser Lys Val Leu Asn Thr Asn Gly Thr Ser Gly Phe Leu Pro
1               5                  10                  15

Gly Gly Tyr Thr Cys Phe Pro His Ser Gln Pro Trp Gln Ala Ala Leu
            20                  25                  30

Leu Val Gln Gly Arg Leu Leu Cys Gly Gly Val Leu Val His Pro Lys
        35                  40                  45

Trp Val Leu Thr Ala Ala His Cys Leu Lys Glu Gly Leu Lys Val Tyr
    50                  55                  60
```

32

Leu Gly Lys His Ala Leu Gly Arg Val Glu Ala Gly Glu Gln Val Arg
65   70   75   80

Glu Val Val His Ser Ile Pro His Pro Glu Tyr Arg Arg Ser Pro Thr
              85   90   95

His Leu Asn His Asp His Asp Ile Met Leu Leu Glu Leu Gln Ser Pro
          100   105   110

Val Gln Leu Thr Gly Tyr Ile Gln Thr Leu Pro Leu Ser His Asn Asn
          115   120   125

Arg Leu Thr Pro Gly Thr Thr Cys Arg Val Ser Gly Trp Gly Thr Thr
          130   135   140

Thr Ser Pro Gln Val Asn Tyr Pro Lys Thr Leu Gln Cys Ala Asn Ile
145   150   155   160

Gln Leu Arg Ser Asp Glu Glu Cys Arg Gln Val Tyr Pro Gly Lys Ile
          165   170   175

Thr Asp Asn Met Leu Cys Ala Gly Thr Lys Glu Gly Gly Lys Asp Ser
          180   185   190

Cys Glu Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Arg Thr Leu Tyr
          195   200   205

Gly Ile Val Ser Trp Gly Asp Phe Pro Cys Gly Gln Pro Asp Arg Pro
          210   215   220

Gly Val Tyr Thr Arg Val Ser Arg Tyr Val Leu Trp Ile Arg Glu Thr
225   230   235   240

Ile Arg Lys Tyr Glu Thr Gln Gln Gln Lys Trp Leu Lys Gly Pro Gln
          245   250   255

<210>   45
<211>   277
<212>   PRT
<213>   Homo sapiens

<400>   45

Met Trp Pro Leu Ala Leu Val Ile Ala Ser Leu Thr Leu Ala Leu Ser
1   5   10   15

Gly Gly Val Ser Gln Glu Ser Ser Lys Val Leu Asn Thr Asn Gly Thr
          20   25   30

Ser Gly Phe Leu Pro Gly Gly Tyr Thr Cys Phe Pro His Ser Gln Pro
          35   40   45

Trp Gln Ala Ala Leu Leu Val Gln Gly Arg Leu Leu Cys Gly Gly Val
          50   55   60

Leu Val His Pro Lys Trp Val Leu Thr Ala Ala His Cys Leu Lys Glu
65   70   75   80

Gly Leu Lys Val Tyr Leu Gly Lys His Ala Leu Gly Arg Val Glu Ala
          85   90   95

33

```
Gly Glu Gln Val Arg Glu Val Val His Ser Ile Pro His Pro Glu Tyr
        100                     105                 110

Arg Arg Ser Pro Thr His Leu Asn His Asp His Asp Ile Met Leu Leu
        115                 120                 125

Glu Leu Gln Ser Pro Val Gln Leu Thr Gly Tyr Ile Gln Thr Leu Pro
    130                 135                 140

Leu Ser His Asn Asn Arg Leu Thr Pro Gly Thr Thr Cys Arg Val Ser
145                 150                 155                 160

Gly Trp Gly Thr Thr Thr Ser Pro Gln Val Asn Tyr Pro Lys Thr Leu
                165                 170                 175

Gln Cys Ala Asn Ile Gln Leu Arg Ser Asp Glu Glu Cys Arg Gln Val
                180                 185                 190

Tyr Pro Gly Lys Ile Thr Asp Asn Met Leu Cys Ala Gly Thr Lys Glu
            195                 200                 205

Gly Gly Lys Asp Ser Cys Glu Gly Asp Ser Gly Gly Pro Leu Val Cys
    210                 215                 220

Asn Arg Thr Leu Tyr Gly Ile Val Ser Trp Gly Asp Phe Pro Cys Gly
225                 230                 235                 240

Gln Pro Asp Arg Pro Gly Val Tyr Thr Arg Val Ser Arg Tyr Val Leu
                245                 250                 255

Trp Ile Arg Glu Thr Ile Arg Lys Tyr Glu Thr Gln Gln Gln Lys Trp
                260                 265                 270

Leu Lys Gly Pro Gln
        275


<210>   46
<211>   19
<212>   DNA
<213>   Artificial

<220>
<223>   primer

<400>   46
aactctacaa tgtgccaca                                                        19


<210>   47
<211>   20
<212>   DNA
<213>   Artificial

<220>
<223>   primer

<400>   47
ttattgtggg cccttcaacc                                                       20
```

34

<210> 48
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 48
ggatggtcca tttataggac   20

<210> 49
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 49
aggctgccct actagtgcaa   20

<210> 50
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 50
atattgccta ggtggatgtg   20

<210> 51
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 51
aagacttcaa ggagccaagc   20

<210> 52
<211> 20
<212> DNA
<213> Artificial

<220>
<223> primer

<400> 52
gacccttcac ctcccaaaat   20

```
<210>  53
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  53
ctagtgatcg cctccctgac                                                          20


<210>  54
<211>  21
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  54
ggtgatctgc gccctggtcc t                                                        21


<210>  55
<211>  21
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  55
aggtgtccgg tggaggtggc a                                                        21


<210>  56
<211>  11820
<212>  DNA
<213>  Homo sapiens

<400>  56
attgagggggg gatcccagca ggtcccattt gttcagattc ttctgggcct ttctgtgttg       60

catttcttcc tctgcaggac acctgtcaca tgagggtctt caggggaaaa ggaattctag      120

tgtctgtgac tgcttcaaag gagaagtaag gggagaggag aggaaagcag gaggaggttg      180

gagagaacct cttgttcctg aggtcttcca atctccttca gctcaaagca ctcagcatgc      240

tgaagttcca gactctgggc tatcacgttc tgacatgcaa cacaggcaac accccagctc      300

catccacgtt tctccaaaag cacaggcatg acgtcatatg gtgacaaaca cccttgtcca      360

aaggaagccc ataggatacg ctaattctag attcacaaat actctagagg aactcacaca      420

atgggatggg ccagtgcccc acacagagta tgaggcctcc caccttggtt gaatatcttt      480

ttctttttttt tctttttttt ttttttgag acggagtctc actctgtcac ccaggctgga      540

gtgcagtggc tcgatctcgg ctcactgcaa cctctgcctc ccaggttcaa gtgattctcc      600
```

36

```
tgcctcagcc tctggagtag ctggaattac aggtgcccac caccacaact ggctaatttt      660

tgtattttta gtagagacga gggtccacca tgttgaccag gcttgtctcg aactcctggt      720

ctcaagtgat ctgcccacct cggcctagtg ctgggattac agacgtgagt caccacgccc      780

ggccccacct tggttaaatt tctgaaaatc atttggtaaa gtgaggaccc ctccagctga      840

gacactgcca ggaaacagct attgagtctc ttagcaccca cagcattaaa acaaacccaa      900

aacattttag gcctcgttga gttctggagg caaaatattc ctcatctaca aatttatttt      960

attttatttt ttaataaaag ttattattat ttttttttat agagagacag ggtcttgctc     1020

tgtgacccag actagagtgc agtggtgtga ccatggttca ctgcagcctc cacctcctgg     1080

gctcaagcga tcctcccacc tcagcctgcc aagtagctgg gaccacaggt atgcccctcc     1140

cccaggctaa ctttttttta cttttttgtgg agatgaggtc tcactatgtt gcccatgctg     1200

gtcttttttt tttttttttt tttttttgag acgggagtgc aggctggagt gcccaggctg     1260

gagtgcagtg gcacaatcat aactcactgc agcctcaaac tcctggggtc aagtgatcct     1320

cccacctcag cctcccacat aactaggact acaggcctgt gtcaccataa tgcctggtta     1380

attttttttag tttttgtttg tagaaacagg gtctcactat gttacccagg ctggcctcta     1440

actcctggcc tcaatccatc ctcccatctc aacctcccaa agtgctagga ttatagccac     1500

gagccaccat gcccggcccc atacttatat ttacttgtag tgagaacact aaaccctac      1560

tcggtcagta attttcaagt acacaataca ttgttactaa ctatatacat ggtattttta     1620

atttgcatga atgctcctta aaatcagcga gcccgcctta ttttttgtat tcaattttat     1680

tggatataaa ttccacatca gtaaacctga ttctcttaaa aatctacaca gaaaaaaaaa     1740

aagagagaga ggttgagttg ggtagttgtt ggtatttttg tttttgtttc tttgcttatt     1800

cagttgaggt ttattgtaaa acttgacacc agaaaaagga agaagtggcg ttttttgtgct     1860

gtgagcgtgt gacgtgtgtc ctttccagag aaaggacagt catggtgctt ttttatcctc     1920

tctgcccaaa gaaggaaagc tcttaacagc cagcaggagg ctttgtaggg accagcgtta     1980

tcaacgccag tcgcgctgac caatgatgag ttaaagcagt taggtcgttt ctaagagcaa     2040

atcaaaagct aaggttctgt gattctgaaa atgagacacg gacagagact ggagacccag     2100

agagaaagtg aaggactaaa agacagtcat agggtgggag tttgctctcc tctgttttgt     2160

tctgggtttt tttgtttgtt tgtgcgctct gtctgaccgc ttttcttttt tttctttttc     2220

tttctttttt tttttttttt ttttgagatg gagtcttgct ctgccgccca ggctggagtg     2280

cggtggcaca atctcggctc actgcaagct ccgcctccca cgttcaaggg attctcctgc     2340

ctcagcctcc cgagcagctg ggattacagg catgcaccac cacactcagc taattttttgt     2400
```

37

```
atttttagta gagatggggt ttcaccatat tgaccaggct ggtcttgaac tcctggcgtc   2460

aagtgacttg cccgcctcgg cctcccaaag tgttgggatt acaggcgtga gccaccgcgc   2520

ctggccctga ctgcttttct ccttggtttg tttgtcaatc ccccttcctc tgagccgaat   2580

tccctttttg ttctcatttt ctctctctgt cccctctctc tctccttctt tctctccttc   2640

cattcctcct agatgaagca aaaactcaga taaaccagca cagaggccag gtatggtggc   2700

tcacacctgt aatcccggca ctttgggaag ccaaggcagg caggttgctt gaggccagga   2760

gttcaagacc agcctggccc acatggtgaa accccgtctc tactaaaaat acaaaaatta   2820

gccggacatg gtggcacgtg cctgtaatcc caggtactca agaggtggag gttgcagtga   2880

gcggagatca cagccctgca ctccagcctg ggtgacagag cgagactcca tctcaaaacg   2940

aaaaacaaaa aacagcacaa agttcccttg tcctgtgact cattctctct ctctctttct   3000

accatttctc cttccctgtg tctttttttt ttctctctgt gggtttattt taagcaatag   3060

aagttcttag caaagaaaaa ctttatggaa ttagattgat ccacttcata tgtacatata   3120

tgaactcagt tcagaaactc tcttctaccc ctgcctgatc acctatttgg aagtctgttc   3180

cttcaactct tcttctcttt ctgggactct ttctagcttg ggcttcctgc ccctcccgtc   3240

cactctcctg ctttcacagc ctctccttcc ccctgcccct cccctgcact gcatggggat   3300

gggccccagg tgtccaaggt ctccccaccc tcctttgtca ctggagtcag gattagaacc   3360

cagctcccta gtcaccttga gtcatcagtc ctggggctgc tgacgggctt gcagaggaga   3420

gagggagtgg ggctgggtct tcccaccctg ggtcctttcc tccttcccca ctccgtttag   3480

ctgtaaagct caattaagtg tgattagctg agaagagttt ctgcagaatt agagcacgcc   3540

ccacccctgt cttcgtggtc cccttccctt aacccggaaa ctggatgggc caggacaaag   3600

agagttaaga gctttgtcag tggtctgtct ggagcgacag atggaaggaa agggaccggt   3660

tgagcaacat gacaggtggc tgaggagcca ggtgcagagt ggtagagttg gctggcggag   3720

tggccagcac atgagaagac aggcaggtag gtggacggag agatagcagc gacgaggaca   3780

ggccaaacag tgacagccac gtagaggatc tggcagacaa agagacaagg tgagaaggag   3840

gtaggcgact gccaatgagg gagtgacaca caggggagca ggtagagaga ggacaagcag   3900

gtcatcccct tggtgacctt caaagagaag cagagagggc agaggtgggg ggcacaggga   3960

aagggtgacc tctgagattc cccttttccc ccagactttg gaagtgaccc accatggggc   4020

tcagcatctt tttgctcctg tgtgttcttg gtgagttctc ccggagcagg gagagggcag   4080

gactgcgact ggatcccttc acccccatga ggaggcccca ccaccctccc catctcagct   4140

ctggccccca gcctggtggt gaggaggaga ggggctttct ctgtgcctcc atttacctgc   4200

agctctcagg gtactgctca cctcggtctc ccctattttt tgatccctct tcccttctgt   4260
```

38

```
ccctctctga atctctgtct ctccatttcc ctcctatgtg taagcatctt tctccctggg    4320

tgtctttgat gtttcatggt cttttctat cactgggtct ctctctcttt ctctctcttt    4380

ctcgtctctc tttctcctct ctctctcctg cctgtttctc tctctcactc tgtgtgtctc    4440

tccatctctg tatcttttct tcctctctct gacccatgcc cctgtctgtc tccagggctc    4500

agccaggcag ccacaccgaa gattttcaat ggcactgagt gtgggcgtaa ctcacagccg    4560

tggcaggtgg ggctgtttga gggcaccagc ctgcgctgcg ggggtgtcct tattgaccac    4620

aggtgggtcc tcacagcggc tcactgcagc ggcaggtaag tcccttcctg gggtgggcga    4680

agggaggact atgggaaggc aagcgctggg ggtaggatca caagggaggg tggtgcccac    4740

tgggaagaag ctgatcctgc aacaagagag tctgaggtta gaccaggagt ggaacttcct    4800

tagcagtggg cctggggtgg tgctgggcag ggtgaggtat gttgggtgga gggccgggga    4860

gggtcctgga acctgccctc ctgcctctcc cattcctgca tgtacccttt ctttcctata    4920

tgacatctgc cactcacccc agccattcct tgacccagtc tgggcccggg gcccaggtct    4980

cacccaagct cttttctttt ttctttttttt tattttttg agacagggtc tcgctctgtc    5040

gcccaggctg ctgtgcaatg gcgtgatcac agctcactgc tgtctctgcc tcccaggttc    5100

aagtgattct cctgccccag cctcctgagt agctgggatt acaggcaccc gccaccatgc    5160

ccagctaatt tttgtatttt ttgtagagac agggttttgc catgttggcc aggctggtct    5220

cgaactcctg gcctcaaatg acctgcccgt cttggcctcc caaagtgctg ggattacagg    5280

tgtgagccac tgcacccggc caacatgacc caaactcttt gtgcaacttc agaatctatg    5340

cctggcacct ctctgggcct cagtagactg atgttctgga attttttct ttttcttct    5400

ttttttttt ttttggagac agagtcttgc tctttctgtc atccaagctg gagtgcagtg    5460

atgctatctt ggctcactac agcctcaacc acctgggctc aagtgatcct cacacctcag    5520

cctcccaagg agctaagact acaggcctgc gccaccacac ctggctaatt tttaaatttt    5580

ttttgtagag acagggtttt gctatgttac ccaggctggt ctcaaactcc tcagctcaag    5640

caatcttcct gccttgacct cccaaagtgc tgggattaca ggcatgagcc actgtgcctg    5700

gcctggaact tttttgtga aaggggagat cagatgcaaa gaaacagaga ctcagggaga    5760

gagagggcca gcagcaggat gcagagaggc cattcatcaa cccactcgtt caatcatgaa    5820

cccactcgtc cacgcatgag catggagggc acatgctccg tgccaggcgg tgggaataag    5880

gcagtgaaca aggtccactg atgtccctgc cttcatgggc ttcaccagcc gagagaatca    5940

gaaagagagg cctggcgcgg tggctcacac ctgtaatccc agcactttgg gaggccgagg    6000

cgggcggatc acttgaggtc aggagtttga gaccagcctg acacacatgg tgaaacctta    6060
```

39

```
tctctactaa aaatacaaaa attagctggg catggtggca tgcttctgta atcccagcta   6120

cttgggaggc tgaggcaggt gaattgcttg aacctgggag gtggaggttg tagtgagcca   6180

agatggtgcc actgcactcc agcctgggcg acagagcgag actcggtctt gaaaaaaaaa   6240

aaaaaaaaaa aaaggagaga gagagacaca gatgcaggga catggtagga gaaacaggga   6300

acacccaaga tggaaagagg gtgatggagg ttgggaataa gagcctgtaa gagagactcg   6360

gagaatgaga gttgcgggtg agaggacaga cagtgagggg cagaacagtg gggagcggca   6420

ggagcgcctg agtgtccgtg gaggggtgca aggtggggga ctgcgtgcct gccacccgct   6480

cagccgtcgc caccggcagc aggtactggg tgcgcctggg ggaacacagc ctcagccagc   6540

tcgactggac cgagcagatc cggcacagcg gcttctctgt gacccatccc ggctacctgg   6600

gagcctcgac gagccacgag cacgacctcc ggctgctgcg gctgcgcctg cccgtccgcg   6660

taaccagcag cgttcaaccc ctgcccctgc ccaatgactg tgcaaccgct ggcaccgagt   6720

gccacgtctc aggctggggc atcaccaacc acccacggag taaggggccc agggccaggg   6780

gtcaggggtc aggatgggta caagtctggg atgcagggcg agaggtcgaa tcatgacacc   6840

tcagaggaag gatgggtaaa gggtcagggt gtgggatggg acatcaggat catggtttgg   6900

ggtcagagat tatggtggat tggggtcttg ggagccaaag gggttaaagg actgggtatg   6960

aagtcaggga tcagaggtca gaggtcagag tgtgtcagag gtcatcacac tggagcaaaa   7020

ggcatatata tatatatatg tatgtatagg atatgggcat tgtgggtcat gggtctgggg   7080

ttagaggtca ccgtagaatt aaggtcatgg gatccagagg ttgtacaatc tggtcaaaat   7140

ctgaggatgg aaattgggat tctatccaaa atcacatatc tgagattgga ggtcatagcg   7200

tttggggtgt ggggcccgaa gtttggggtc atggaggctg gggcccaata aactaggatc   7260

aggggacact ggcgttggaa gcagtgaggt ttggaagatg cagagctgag gttggaggtt   7320

aaggtaaaga cagggacatg gggtcaggag acagaagata tgagatcaag ctgggatcat   7380

aaggtaataa dacagaaggt caaagatcac agtagctggc attgaagagg gtcaggtctg   7440

gattcgttgt ctctgacgct ggagagacaa gaaagttctt gagttatgcc actcaaagtc   7500

aaatgtcaaa gatcaaagag accgtcaatc atctggggtc atgattcata tgaaattaag   7560

tcataaatat gtaacttgga ggtttcggga ttgtagtaca ggtcggtgag gggcaggggt   7620

attgacatgg atgggccaca tccagggaag agggacgtgg cctcaaagtg gggagattta   7680

ggggaccctg cagcacgcat gttctctctc cagacccatt cccggatctg ctccagtgcc   7740

tcaacctctc catcgtctcc catgccacct gccatggtgt gtatcccggg agaatcacga   7800

gcaacatggt gtgtgcaggc ggcgtcccgg ggcaggatgc ctgccaggtg agccagtgca   7860

ggcagcgtgc gtggtcacca ggacaggaag tgaaggggag gggctggaag caggagggga   7920
```

40

```
actgatggag gatgaatcag ggaaaggggga tgctgcagag agacggggtc aaaaaggaag    7980

ggagaggctg gttacggagg ctcacacctg taatcccagc actttgggag gccgaggcgg    8040

gcggatcact tgaggtcagg agttcaagac aagcctggcc aacacggtga gactctgaat    8100

ctactaaaaa taccagaatt agccgggggt ggtggtgcaa gcctgtggcc ccagctactt    8160

ggaaggctga ggcaggagaa tcgcttgatc ccgggaggcg gaggttgcag tgagctgaga    8220

tcacgccact gcactccagc ctgggcgaca gagccagact ctgtctcaaa acaaaataat    8280

taataataat aataataata ataataataa taatggagga gaggcccagg ataagggagg    8340

gagagagaca gggagtaaaa gggaggaccg gggaatggag gaggggagg ggcagggaga    8400

gagagggagg aagggaacag agaaggaaag atggggcagg ggttacagag agagacagca    8460

aaacagacgg agaggactgg gagcccagac agggaaccag ctgtttctgg ggctctaagt    8520

ctttcccata ccatcctcca gttggtgctg tcccagactg agagagattt gaggatggcg    8580

gtctctcccc tcattggtca gggccccagc cattgtcctt gagagaactc tgtgcttttg    8640

atggagtcct gcccaccttc cctgggattg gtcatttttg atggcactct ctcccctcat    8700

tggtcagaac cccaggcatt gtccttgaga gaacctctat cctttatgga gtcccaccct    8760

cctcccctgg gattggtcat tgataatagt gttctctctc ctcattggtc agggccccag    8820

ccattgtcct tgagagaatg ctcgactctt tatgttgtct tgacagcctc ccctgagatt    8880

ggtcattaat gactgtgctc tctctcctca ttggtcaggg ccccagccat tgtccttgag    8940

agaacctctg tcctttatgg agttccaccc ttcttccctg ggattggccc ctagagacag    9000

tggttcttct cttttggtta gccattgcca ttgtcctccg ggaaagtgat tatactcttt    9060

tgtctaatga ccagacttgg agccctcccc aaggcccagg actgggttga agggttgggg    9120

aggaaaacag aaataagatg tctcccttgt tcagacagta cttctcttcc cttccagggt    9180

gattctgggg gccccctggt gtgtggggga gtccttcaag gtctggtgtc ctggggggtct    9240

gtggggccct gtggacaaga tggcatccct ggagtctaca cctatatttg caagtatgtg    9300

gactggatcc ggatgatcat gaggaacaac tgacctgttt cctccacctc caccccacc    9360

ccttaacttg ggtacccctc tggccctcag agcaccaata tctcctccat cacttcccct    9420

agctccactc ttgttggcct gggaacttct tggaacttta actcctgcca gcccttctaa    9480

gacccacgag cggggtgaga gaagtgtgca atagtctgga ataaatataa atgaaggagg    9540

ggccatgtct gtccatttga agtcctcatg ctggttgaga ctggaagaag gactcagcag    9600

tttccctatc tcataggagt agaaacagag ctcaaataag gccaggcaca gtggctcaca    9660

cctgtaatcc catcactttg ggaagctgag gcaggtggat cacctgaggt caggaactcg    9720
```

41

```
ggaccagcct ggtcaacata gtgaaacccc aactctacta aaaatgcaaa aattagccag    9780

gcatggtggc gcatgcctgt aatcccagct actcaggagg ctgagacagg agaatagcat    9840

gaacccgtga ggcagaggct gcagcgagcc gagattgaac cattacactc cagcctgggc    9900

gacagagcga gactccatct caaaaacaaa caaacaaaaa acccagtgct caaataggat    9960

gagggtcttc cctgagtagt tactcagaaa tggagtagaa aaagttactt ttaataatat   10020

aggccgggtg cagtggccca cgcctgtaat cccagcactt tgggaggccg aggtgggagg   10080

atggcttgag ctcagatttc gagatcagcc tggcaacaca gtgaaatctt gtcactacaa   10140

aaacacaaaa aattagctgg gtgtggtggt gcgtgcctgt agtcccagct acttgggaag   10200

ctgaggtggg aggatcaccc gagccgggga ggtggaggct gcaaagagcc gagatcatgc   10260

cactgcactc cagcctgggc aataaagtga gaccttgtct caaaaacaaa aacccagcaa   10320

tataaataag acacatgttt cttcatctgg cataatagaa atagtgccca gagcttataa   10380

gcttttcaag agtccacaaa agacccgaaa aagaaaaaga aaattgttag ctccaaaata   10440

ccagatgaaa gctgcaaagt caacatttat gaccatttaa tccaatgtcc ataaaacgta   10500

gcattctttc cactagccaa ctgcagttta ctttcttgta atgaagcata cattgtatct   10560

ttaatgtggg acgtggcttt gttctaataa gacgaagggt ggagtgcagg cttggaaagc   10620

aggagagctc agcctacgtc tttaatcctc ctgcccaccc cttggattct gtctccactg   10680

ggactcaaga ggtgaggaga gaccatctcc ccaaatgcac tgaagggaaa ctggaggagg   10740

gagggagtga ggggtgatca taccagcgga ggcacatttg ctgagccccc ccgcagtctg   10800

ctctttccaa gtggaccctc ctggaagcct gatcccaacc tcccctgcaa gcaggtctgt   10860

cacccccatc tctcagatga agaaactgag ccttgcaggg gtggagtccc ttgtccccac   10920

gtcataaggg tagtcatagt agtaggaaga ggaagcacct aggtttgagg ccagggctgg   10980

ctgctgtcag aacctaggcc ctcccctgcc ttgctccaca cctggtcagg ggagagaggg   11040

gaggaaagcc aagggaaggg acctaactga aaacaaacaa gctgggagaa gcaggaatct   11100

gcgctcgggt tccgcagatg cagaggttga ggtggctgcg ggactggaag tcatcgggca   11160

gaggtctcac agcagccagt aagtgaacag ctggactcgg gctgcctggg cggcagggag   11220

aagcgggcag gggaagggtc agcagaggag cgaggcccca gaggagccct ggggtggagc   11280

acagccaagg gctctgttcc ctttcctgga ctcggcttcc acaggccctg acctgcctcc   11340

cccaccctcc ggtcctgccc ctgtgcctgg cagcagcccc acctgtgtga catcccagca   11400

cacccccccct ctccttgcaa aggagaaggg agcggcctag gggaggccag gggcccacct   11460

gggctggggc tgtggagagg gagtggctgg gacgggagga aaaagagaga cggagattag   11520

atggaagaag agggatttca agacaaattg ccagagatgc agtcagagag actgactgag   11580
```

42

agacacaaag atagaaggaa ttagagaaag ggccacacag agccagacag agagagaaga 11640

gtggagatgg agacagggac gaggacagag aaaggcagac agacacatag ggacagaaag 11700

agaaaaatca cacaaagtca gaattactga atgacaggga atgacacata gaacgagaca 11760

cagattcaga gactcagggc agggaaagga aggctgcaga cagacagaca gacagaggga 11820

<210> 57
<211> 184
<212> PRT
<213> Homo sapiens

<400> 57

Leu Ser Gln Ala Ala Thr Pro Lys Ile Phe Asn Gly Thr Glu Cys Gly
1   5   10   15

Arg Asn Ser Gln Pro Trp Gln Val Gly Leu Phe Glu Gly Thr Ser Leu
                20   25   30

Arg Cys Gly Gly Val Leu Ile Asp His Arg Trp Val Leu Thr Ala Ala
            35   40   45

His Cys Ser Gly Ser Arg Tyr Trp Val Arg Leu Gly Glu His Ser Leu
            50   55   60

Ser Gln Leu Asp Trp Thr Glu Gln Ile Arg His Ser Gly Phe Ser Val
65   70   75   80

Thr His Pro Gly Tyr Leu Gly Ala Ser Thr Ser His Glu His Asp Leu
                85   90   95

Arg Leu Leu Arg Leu Arg Leu Pro Val Arg Val Thr Ser Ser Val Gln
            100   105   110

Pro Leu Pro Leu Pro Asn Asp Cys Ala Thr Ala Gly Thr Glu Cys His
            115   120   125

Val Ser Gly Trp Gly Ile Thr Asn His Pro Arg Asn Pro Phe Pro Asp
    130   135   140

Leu Leu Gln Cys Leu Asn Leu Ser Ile Val Ser His Ala Thr Cys His
145   150   155   160

Gly Val Tyr Pro Gly Arg Ile Thr Ser Asn Met Val Cys Ala Gly Gly
                165   170   175

Val Pro Gly Gln Asp Ala Cys Gln
                180

<210> 58
<211> 111
<212> PRT
<213> Homo sapiens

43

<400> 58

```
Met Gly Leu Ser Ile Phe Leu Leu Leu Cys Val Leu Gly Leu Ser Gln
1               5                   10                  15

Ala Ala Thr Pro Lys Ile Phe Asn Gly Thr Glu Cys Gly Arg Asn Ser
            20                  25                  30

Gln Pro Trp Gln Val Gly Leu Phe Glu Gly Thr Ser Leu Arg Cys Gly
        35                  40                  45

Gly Val Leu Ile Asp His Arg Trp Val Leu Thr Ala Ala His Cys Ser
        50                  55                  60

Gly Arg Pro Ile Pro Gly Ser Ala Pro Val Pro Gln Pro Leu His Arg
65                  70                  75                  80

Leu Pro Cys His Leu Pro Trp Cys Val Ser Arg Glu Asn His Glu Gln
            85                  90                  95

His Gly Val Cys Arg Arg Arg Pro Gly Ala Gly Cys Leu Pro Gly
            100                 105                 110
```

<210> 59
<211> 254
<212> PRT
<213> Homo sapiens

<400> 59

```
Met Gly Leu Ser Ile Phe Leu Leu Leu Cys Val Leu Gly Leu Ser Gln
1               5                   10                  15

Ala Ala Thr Pro Lys Ile Phe Asn Gly Thr Glu Cys Gly Arg Asn Ser
            20                  25                  30

Gln Pro Trp Gln Val Gly Leu Phe Glu Gly Thr Ser Leu Arg Cys Gly
        35                  40                  45

Gly Val Leu Ile Asp His Arg Trp Val Leu Thr Ala Ala His Cys Ser
        50                  55                  60

Gly Ser Arg Tyr Trp Val Arg Leu Gly Glu His Ser Leu Ser Gln Leu
65                  70                  75                  80

Asp Trp Thr Glu Gln Ile Arg His Ser Gly Phe Ser Val Thr His Pro
            85                  90                  95

Gly Tyr Leu Gly Ala Ser Thr Ser His Glu His Asp Leu Arg Leu Leu
            100                 105                 110

Arg Leu Arg Leu Pro Val Arg Val Thr Ser Ser Val Gln Pro Leu Pro
        115                 120                 125

Leu Pro Asn Asp Cys Ala Thr Ala Gly Thr Glu Cys His Val Ser Gly
        130                 135                 140

Trp Gly Ile Thr Asn His Pro Arg Asn Pro Phe Pro Asp Leu Leu Gln
145                 150                 155                 160
```

44

Cys Leu Asn Leu Ser Ile Val Ser His Ala Thr Cys His Gly Val Tyr
              165   170   175

Pro Gly Arg Ile Thr Ser Asn Met Val Cys Ala Gly Gly Val Pro Gly
              180   185   190

Gln Asp Ala Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Gly Gly
          195   200   205

Val Leu Gln Gly Leu Val Ser Trp Gly Ser Val Gly Pro Cys Gly Gln
    210   215   220

Asp Gly Ile Pro Gly Val Tyr Thr Tyr Ile Cys Asn Ser Thr Leu Val
225   230   235   240

Gly Leu Gly Thr Ser Trp Asn Phe Asn Ser Cys Gln Pro Phe
              245   250

<210> 60
<211> 248
<212> PRT
<213> Homo sapiens

<400> 60

Met Gly Leu Ser Ile Phe Leu Leu Leu Cys Val Leu Gly Leu Ser Gln
1   5   10   15

Ala Ala Thr Pro Lys Ile Phe Asn Gly Thr Glu Cys Gly Arg Asn Ser
          20   25   30

Gln Pro Trp Gln Val Gly Leu Phe Glu Gly Thr Ser Leu Arg Cys Gly
          35   40   45

Gly Val Leu Ile Asp His Arg Trp Val Leu Thr Ala Ala His Cys Ser
          50   55   60

Gly Ser Arg Tyr Trp Val Arg Leu Gly Glu His Ser Leu Ser Gln Leu
65   70   75   80

Asp Trp Thr Glu Gln Ile Arg His Ser Gly Phe Ser Val Thr His Pro
              85   90   95

Gly Tyr Leu Gly Ala Ser Thr Ser His Glu His Asp Leu Arg Leu Leu
          100   105   110

Arg Leu Arg Leu Pro Val Arg Val Thr Ser Ser Val Gln Pro Leu Pro
          115   120   125

Leu Pro Asn Asp Cys Ala Thr Ala Gly Thr Glu Cys His Val Ser Gly
    130   135   140

Trp Gly Ile Thr Asn His Pro Arg Asn Pro Phe Pro Asp Leu Leu Gln
145   150   155   160

Cys Leu Asn Leu Ser Ile Val Ser His Ala Thr Cys His Gly Val Tyr
              165   170   175

Pro Gly Arg Ile Thr Ser Asn Met Val Cys Ala Gly Gly Val Pro Gly
              180   185   190

45

```
Gln Asp Ala Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Gly Gly
        195                 200                 205

Val Leu Gln Gly Leu Val Ser Trp Gly Ser Val Gly Pro Cys Gly Gln
        210                 215                 220

Asp Gly Ile Pro Gly Val Tyr Thr Tyr Ile Cys Lys Tyr Val Asp Trp
225                 230                 235                 240

Ile Arg Met Ile Met Arg Asn Asn
                245


<210>  61
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  61
tcagccaggc agccacaccg                                              20


<210>  62
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  62
ttggtgatgc cccagcctga                                             20


<210>  63
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  63
ccacaccgaa gattttcaat                                             20


<210>  64
<211>  18
<212>  DNA
<213>  Artificial

<220>
<223>  primer

<400>  64
gcccctcctt catttata                                               18
```

```
<210>  65
<211>  8280
<212>  DNA
<213>  Homo sapiens

<400>  65
atcgtgtaat caccgccaca tccagtgcaa agctgattcg tcaccacaga gcagctccct        60

cctgccaccc catccctggg tcccaagaga accctttctt aaaagaggga gttcttgacg       120

ggtgtggtgg ctcatgcctg taatccttgc actttgggag gccaaggagg gtggatcatt       180

tgaggtcagg agtttgagac cagactggcc aacatggtga aaccctgtct ttactaaaaa       240

tacaaaaaaa tgagcggggc atggtggtgg gtgcctatag ccccagctac tcaggaggct       300

gaggcaggag aatcgcttga acccaggagg cagaggttgc agtgagccga gattgagcca       360

ctgcactcca gccggggcta aagagtgaga ctctgtctca aaaaaaaaa aaagaaaaag       420

aaaaaagaa aaaaaataa aataaataaa taaataaaat aaatttaaaa atttaaaaat       480

aaagaggggg ttcttgtgtt gatgccgagc ctgaaccaag gcagaggagg ccgggaaggc       540

ttcccaaggc cttcagctca aagcagggag gcccatagtt aaacagaaac agttcaggaa       600

tcacagaaag gcacctgggg agagatgggt gtgtggctcc agatgcaggt gcccagacag       660

tgcgtcccca ggtgtacaga cagacccagg ccaagctcca gctcaaagag ccagcctagg       720

ggggtgccga ggtggaggga ggctgagtca ggctgaggcc ggggaacagt tggggtagcc       780

aagggaggca agcagcctcc tgagtcacca cgtggtccag gtacggggct gcccaggccc       840

agagacggac acaagcactg gggaatttaa ggggctaggg gaggggctga ggagggtagg       900

ccctccccca aatgaggatg gaacccccc aactccagaa cccccctgca ggctggccag       960

aatccttccc catctcattc actctgtctc tcctgctctc tgccgtctcc tattttgaat      1020

ttccaacccc gtctgttaag actgtccttc tgtctctgaa tctctgtccc cttctctttc      1080

tgggtctctc tccctctccc tctgggtctc tgtcccccctc tctgggtctc tgtcactctc      1140

tctttgcatc tccagctctc actttgtctc tgcacctagc agatcccaag ctggggaatg      1200

ccagttctgg caccaacctt cctgctccct gctggggcct ctgctccccc atctctcagg      1260

agtcgaaagt gagaaagcaa ggtgggcagc tctgctccag gtccaggtat ctcccgccca      1320

cctcctgccc gtcctctatc ccacccctcc tctccatctc tccctggcgc tgccatctct      1380

catctaggcc tccgtctcct ctgtcattgt ccccatcccc tgtaggtgcc catccttccc      1440

gtctcccctc tgccatcggc ctgcctgtcc catcctcttt ctcccaccat gtcccgttct      1500

cttccacgtc tcatgcccgc actgccttca tcatcatcgc tgttgttctg tgtgtgtttg      1560

tggtgagtgc cgcatggtgg gggcgtctcg gcctctctcc tctctctcca ctgttttctc      1620
```

47

```
tttctgtgtg tctgtttcca ttctatctcc accttcttcc ctccgtcttt tgcttttcta    1680

tctccacttc tccacacccc tctctccctg cgtctctgtg tctccctctt cctctgtctt    1740

gttttttttcc caccgtctgc ctcttctgtt ccctgtcaca tccaacttcc accggtttct    1800

ccagctctct cctcagttcc ttctctcatg agcacacctg cctctgtgct cgtattcctg    1860

gactcctctc tctccactgt catatcttct cattcatttt cccagtctct ctctgtctct    1920

tgctctcccc ctctctgtca ctctgtctct gtctctctct ttctctctct ctctctgtgt    1980

ctctctgtct ggctctctct ctgtctctct ctccatctct ctctctctct ccccccgtc     2040

accctgtctc tgtctctctc tgtctgtgtg tctctctgtc tttctctctc tccatctctc    2100

tctgtctctc tctctctctc tctctctctc cctctctccc tcctcccgtg actccctctc    2160

tcagtccatc tcttcctccc tctctcagcc ccttcgtgcc ctttcctctg acactcccca    2220

ccctggtttc ctgactccac cactagatcc accacctcca gcaactggga accctcccct    2280

gcccaccctg ccctggggtc ccctcccagg attccttcta gattatagca tcttccctgg    2340

gcgggttctc atgaacaatt gtggctgctt ttttggccag acaggggagg gaggggatgg    2400

gatcagggag tcctggaatg ggaactaggc aataaaaaaa aaaaaatgtc agaagcaggg    2460

cggcgggagg tgggggcagg gccagctgtc cttaccaggg ataaaaggct ttgccagtgt    2520

gactaggaag agagacacct cccctccttc cttcatcaag acatcaagga gggacctgtg    2580

ccctgctcca catcctccca cctgccgccc gcagagcctg caggccccgc ccccctcgtc    2640

tctggtccct acctctctgc tgtgtcttca tgtccctgag ggtcttgggc tctgggtaag    2700

tgccccttgc tgtctctgcc tctcagcccc cggttctgtt gaaggttcct tctctctcac    2760

tttttctctg catttgacag gacctggccc tcagccccta aaatgttcct cctgctgaca    2820

gcacttcaag tcctggctat aggtaagaga acggttgggt atgacacaag ggggtcccct    2880

ggagactctg agaagagatg gggatgggtc cttggggccc ctggatgctc atggtgacct    2940

cataagaaag agcagggagt ggtttggggg tcatggtggg ggaacgtgct ggaggcctaa    3000

attcctagtt gtggaggtgc tagggaattg tggggccggg gagagaggtg tttataaggt    3060

ctggtgcaaa atacataagg aatcttaggg aactattagg tcctgagtgg gtcatagcag    3120

aaagatcacg gggctctacc tgactgtgtt aggaaagaaa caatgtcaga aagatgtttt    3180

gttgtcagag ggaaggtgga gaaggatgat gggatggcgg gatcgtggca tggggtggcg    3240

ggatcgtggc atgggtgtgt gaggtggatg ggggcaagtg tggggcaaga gatggcggat    3300

ccttggggtc ccactgagtg ggaacgttgg ggaggagaca gggaggtcct tgaatgtgtt    3360

ggggaaggac tcattggggg gaaatgtggc atatttcgag aagtgatcac agaaattatg    3420
```

48

```
ggagcataga gctaagggtc gtagatgtag caaggccctg gataaggtgg ccacggcaca    3480

aaataagaga tgctacggag gtgacttggg aggtgagtca gaaagctctc cgtgctgggg    3540

caataacggg gtcaatattg ggcatgtctc accctgggtg ggacagatag aggcgggcag    3600

tttaggggtt agaccaaaag gaaggggatt tgtcagtttt ggaatcctac aaacttgtgg    3660

agtggagagt gtttgctcat ctactttccc cacccaatcc tgtccactcc tagccatgac    3720

acagagccaa gaggatgaga acaagataat tggtggccat acgtgcaccc ggagctccca    3780

gccgtggcag gcggccctgc tggcgggtcc caggcgccgc ttcctctgcg gaggcgccct    3840

gctttcaggc cagtgggtca tcactgctgc tcactgcggc cgcccgtaag tgaccccctc    3900

ccctgtccct gtacctagtg aattccagag tctaaagccc tagagctgag ctgagaacct    3960

ggatctctgt atagaaccca atgtagtggc tggctcctgg tttgaggtct agagaagagc    4020

ctggaacaaa aacacagctc gggatgtggg ctcctccata aatctcgaac tcagcatagg    4080

ttctgaaagc agatgggcag cttggaaccc atggacctgc tgagaaccga acatctgatc    4140

cagtgattct tccagaggcc acacattaca tcgagaccaa gcttagccca ttccagattg    4200

gtggctgaat tcaggacccc gtctacattc agaaactcag gacactacgt agaactcaga    4260

gcccagttca ggacctgcag tctagccata aatccagaac tagaacgctg ctcacagctg    4320

gaacatacaa ctctaagaat agaggcaaaa cctggaggct gtttcacacc caaggtttag    4380

ttcagagtct agtctatagc tccgctatga gcagacttca acccagtgtt tgaatcccag    4440

aatgtggcgg gtgcggtggc tcatgcctat aatcctagca ctttgggatg ctgaggcagg    4500

cagatcacct gaggtcagga gttcgagacc agcctgagca acatagagaa accctgtctc    4560

tactaaaaat gcaaaattag ccaggcatgg tggcacatgc ctgtaatccc agccactcgg    4620

gaggctgagg caggagaatc acttgaacct gggaggcgga ggttgcagtg agtcaagatc    4680

gcaccattgc actccaggct aggcaacaag agcgaaactc catatcaatc aatcaatcaa    4740

taaatcccag aatgcagatc ctaatcagaa gccccatata aaacctagac ccctcctaaa    4800

ttctagatct gaacttacaa cccagacccc agccaagagg tcaaaatgcc tataagccat    4860

atctatgcca taaacaggtc agtctagaac ctagagatca aagctcaggc cagagtctag    4920

aatataaagg ccagaatgca aaccagactc tagaatcttg gatccgggcc ataacctaga    4980

gctccaacta gaacccagag cccaacctga ggtcaagggc tagggccaga gtccagaacc    5040

aagagcccta taatccaata tgaaacagac ctgtagaggc tgggtgcggt ggctcacgcc    5100

tgtaatccca gcactttggg aggctgaggc gggagaatca cttgaactgg gagttggagg    5160

tcgagagtga gctgagatcg tgccactgca ctccagccta ggtgacagag cgagactcca    5220

tcacaaaaaa aaaataaata aataaatcaa gtcataatcc aggttcgatc tagaatcctg    5280
```

49

```
atcttagcat agagtcaaaa gtttaagatg tctagaactc agaacccagg ctagaaacag    5340

aatggtgcct actccggaat atcagttccg atttagagcc tagactcata acgcagtttc    5400

gcttaggact caatgcaccg agcccagcac agaccctggc acggagccaa gctctcccaa    5460

tcatcacctt cttcccaagc caggagctgg agcccagccc aagagcggaa ggagaggcag    5520

ctggggctgg gccgagagaa tgccctggcc atggggaagg gcacaggagg ccaagaatgc    5580

tcggcctgca gttagtgaga agcaggctag acctcgggga agactcgtca cccggccagg    5640

gaaccgggct ggagggtggg gaggagtctc tggctcagac cctgagcagc gcttctcttg    5700

ggggtcgtgg ccaggatcct tcaggttgcc ctgggcaagc acaacctgag gaggtgggag    5760

gccacccagc aggtgctgcg cgtggttcgt caggtgacgc accccaacta caactcccgg    5820

acccacgaca acgacctcat gctgctgcag ctacagcagc ccgcacggat cgggagggca    5880

gtcaggccca ttgaggtcac ccaggcctgt gccagccccg ggacctcctg ccgagtgtca    5940

ggctggggaa ctatatccag ccccatcggt gaggactcct gcgtcttgga aagcagggga    6000

ctgggcctgg gctcctgggt ctccaggagg tggagctggg gggactgggg ctcctgggtc    6060

tgagggagga ggggctgggc ctggactcct gggtctgagg gaggagggg ctgaggcctg    6120

gactcctggg tctcaaggag gaggagctgg gcctggactc atacgtctga gggaggaggg    6180

gctggagcct ggactcctgg gtctcaagga ggaggggctg ggcctggact tctgggtctg    6240

agggaggagg ggctggggac ctggactccc gggtctgagg gaggagggac tgggggtctg    6300

gactcctggg tctgagggag gaggggctgg gggcctggac tcctgggtct gagggaggag    6360

gtgctggggc tggactcctg ggtcggaagg aggaggggct gggggcctgg acccttgggt    6420

cttatgggag ggtagaccca gttataaccc tgcagtgtcc cccagccagg taccccgcct    6480

ctctgcaatg cgtgaacatc aacatctccc cggatgaggt gtgccagaag gcctatccta    6540

gaaccatcac gcctggcatg gtctgtgcag gagttcccca gggcgggaag gactcttgtc    6600

aggtaaggcc caggatggga gctgtggtag ggattatttg ggactgggat ttaagcaaat    6660

gatgtcagga gcatggaagt ctgcagaggt cttcagaaga gagtgaaccg caggcacaga    6720

gagattccga tagccaggcc accctgcttc ctagccctgt gccccctggg taatggactc    6780

agagcattca tgcctcagtt tcctcatctg tcaggtggga gtaaccctct tagggtagtt    6840

ggtggaatgg gatgaggcag gttggggaaa gatcgcagag tggcctctgc tcatatgggt    6900

ctgggaaagg ctgtgctgag gcttctagaa atcttaatgc atccttgagg gaggcagaga    6960

tggggaaata gaaaaagaga gacacacaaa tgttctacag ttggagcgaa cagagagggg    7020

cctggtgaga ttcaagggac aggcaggtgc acacagagac agagccagac ccagcggaga    7080
```

50

```
gggaaggaag tgccccgacc tccggggctg agacctcaga gctggggcag gactgtgtcc    7140

ctaactgtcc accagtgtct ctgcctgtct ccctgtgtct gcttctcggg ttctctgtgc    7200

catggtggct ctggctacct gtccatcagt gtctccattt ctgttcctcc ccctcagggt    7260

gactctgggg gacccctggt gtgcagagga cagctccagg gcctcgtgtc ttggggaatg    7320

gagcgctgcg ccctgcctgg ctaccccggt gtctacacca acctgtgcaa gtacagaagc    7380

tggattgagg aaacgatgcg ggacaaatga tggtcttcac ggtgggatgg acctcgtcag    7440

ctgcccaggc cctcctctct ctactcagga cccaggagtc caggccccag cccctcctcc    7500

ctcagaccca ggagtccagg cccccagccc ctcctccctc agacccggga gtccaggccc    7560

ccagcccctc ctccctcaga cccaggagtc caggccccag cccctcctcc ctcagacccg    7620

ggagtccagg cccccagccc ctcctccctc agacccagga gtccaggccc cagtccctcc    7680

tccctcagac ccaggagtcc aggcccccag cccctcctcc ctcagaccca ggaatccagg    7740

cccagcccct cctccctcag acccaggagc cccagtcccc cagcccctcc tccttgagac    7800

ccaggagtcc aggcccagcc cctcctccct cagacccagg agccccagtc cccagcatcc    7860

tgatctttac tccggctctg atctctcctt tcccagagca gttgcttcag gcgttttctc    7920

cccaccaagc ccccacccctt gctgtgtcac catcactact caagaccgga ggcacagagg    7980

gcaggagcac agacccctta aaccggcatt gtattccaaa gacgacaatt tttaacacgc    8040

ttagtgtctc taaaaaccga ataaataatg acaataaaaa tggaatcatc ctaaattgta    8100

ttcattcatc catgtgttta cttttttattt tttgagacaa ggtcttgctc agtctcctgg    8160

tgaaatgctg taacgcaatc atagctcact gcaaccgtga cctcctgggc tccagtgatc    8220

ctcttacctc agcctcccga gtagctggga ccacaggtgc ccgtcaccat gccccgctac    8280
```

<210> 66
<211> 237
<212> PRT
<213> Homo sapiens

<400> 66

```
Met Thr Gln Ser Gln Glu Asp Glu Asn Lys Ile Ile Gly Gly His Thr
1               5                   10                  15

Cys Thr Arg Ser Ser Gln Pro Trp Gln Ala Ala Leu Leu Ala Gly Pro
            20                  25                  30

Arg Arg Arg Phe Leu Cys Gly Gly Ala Leu Leu Ser Gly Gln Trp Val
        35                  40                  45

Ile Thr Ala Ala His Cys Gly Arg Pro Ile Leu Gln Val Ala Leu Gly
    50                  55                  60
```

51

Lys His Asn Leu Arg Arg Trp Glu Ala Thr Gln Gln Val Leu Arg Val
65   70   75   80

Val Arg Gln Val Thr His Pro Asn Tyr Asn Ser Arg Thr His Asp Asn
            85   90   95

Asp Leu Met Leu Leu Gln Leu Gln Gln Pro Ala Arg Ile Gly Arg Ala
            100   105   110

Val Arg Pro Ile Glu Val Thr Gln Ala Cys Ala Ser Pro Gly Thr Ser
            115   120   125

Cys Arg Val Ser Gly Trp Gly Thr Ile Ser Ser Pro Ile Ala Arg Tyr
            130   135   140

Pro Ala Ser Leu Gln Cys Val Asn Ile Asn Ile Ser Pro Asp Glu Val
145   150   155   160

Cys Gln Lys Ala Tyr Pro Arg Thr Ile Thr Pro Gly Met Val Cys Ala
            165   170   175

Gly Val Pro Gln Gly Gly Lys Asp Ser Cys Gln Gly Asp Ser Gly Gly
            180   185   190

Pro Leu Val Cys·Arg Gly Gln Leu Gln Gly Leu Val Ser Trp Gly Met
        195   200   205

Glu Arg Cys Ala Leu Pro Gly Tyr Pro Gly Val Tyr Thr Asn Leu Cys
        210   215   220

Lys Tyr Arg Ser Trp Ile Glu Glu Thr Met Arg Asp Lys
225   230   235

<210> 67
<211> 251
<212> PRT
<213> Homo sapiens

<400> 67

Met Phe Leu Leu Leu Thr Ala Leu Gln Val Leu Ala Ile Ala Met Thr
1   5   10   15

Gln Ser Gln Glu Asp Glu Asn Lys Ile Ile Gly Gly His Thr Cys Thr
            20   25   30

Arg Ser Ser Gln Pro Trp Gln Ala Ala Leu Leu Ala Gly Pro Arg Arg
        35   40   45

Arg Phe Leu Cys Gly Gly Ala Leu Leu Ser Gly Gln Trp Val Ile Thr
    50   55   60

Ala Ala His Cys Gly Arg Pro Ile Leu Gln Val Ala Leu Gly Lys His
65   70   75   80

Asn Leu Arg Arg Trp Glu Ala Thr Gln Gln Val Leu Arg Val Val Arg
            85   90   95

Gln Val Thr His Pro Asn Tyr Asn Ser Arg Thr His Asp Asn Asp Leu
            100   105   110

52

```
Met Leu Leu Gln Leu Gln Gln Pro Ala Arg Ile Gly Arg Ala Val Arg
        115                 120                 125

Pro Ile Glu Val Thr Gln Ala Cys Ala Ser Pro Gly Thr Ser Cys Arg
        130                 135                 140

Val Ser Gly Trp Gly Thr Ile Ser Ser Pro Ile Ala Arg Tyr Pro Ala
145                 150                 155                 160

Ser Leu Gln Cys Val Asn Ile Asn Ile Ser Pro Asp Glu Val Cys Gln
            165                 170                 175

Lys Ala Tyr Pro Arg Thr Ile Thr Pro Gly Met Val Cys Ala Gly Val
            180                 185                 190

Pro Gln Gly Gly Lys Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu
        195                 200                 205

Val Cys Arg Gly Gln Leu Gln Gly Leu Val Ser Trp Gly Met Glu Arg
    210                 215                 220

Cys Ala Leu Pro Gly Tyr Pro Gly Val Tyr Thr Asn Leu Cys Lys Tyr
225                 230                 235                 240

Arg Ser Trp Ile Glu Glu Thr Met Arg Asp Lys
            245                 250


<210> 68
<211> 249
<212> PRT
<213> Homo sapiens

<400> 68

Met Ala Thr Ala Gly Asn Pro Trp Gly Trp Phe Leu Gly Tyr Leu Ile
1               5                   10                  15

Leu Gly Val Ala Gly Ser Leu Val Ser Gly Ser Cys Ser Gln Ile Ile
            20                  25                  30

Asn Gly Glu Asp Cys Ser Pro His Ser Gln Pro Trp Gln Ala Ala Leu
        35                  40                  45

Val Met Glu Asn Glu Leu Phe Cys Ser Gly Val Leu Val His Pro Gln
    50                  55                  60

Trp Val Leu Ser Ala Ala His Cys Phe Gln Asn Ser Tyr Thr Ile Gly
65                  70                  75                  80

Leu Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met
            85                  90                  95

Val Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Pro Leu
            100                 105                 110

Leu Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu Ser Val Ser Glu
        115                 120                 125
```

53

Ser Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln Cys Pro Thr Ala
    130   135   140

Gly Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu Ala Asn Gly Arg
145   150   155   160

Met Pro Thr Val Leu Gln Cys Val Asn Val Ser Val Val Ser Glu Glu
                165   170   175

Val Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe Cys
            180   185   190

Ala Gly Gly Gly His Asp Gln Lys Asp Ser Cys Asn Gly Asp Ser Gly
            195   200   205

Gly Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Val Ser Phe Gly
    210   215   220

Lys Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val Tyr Thr Asn Leu
225   230   235   240

Cys Lys Phe Thr Glu Trp Ile Glu Lys
                245

<210>   69
<211>   253
<212>   PRT
<213>   Homo sapiens

<400>   69

Met Ala Thr Ala Gly Asn Pro Trp Gly Trp Phe Leu Gly Tyr Leu Ile
1   5   10   15

Leu Gly Val Ala Gly Ser Leu Val Ser Gly Glu Met Ser Pro Ser Cys
                20   25   30

Ser Gln Ile Ile Asn Gly Glu Asp Cys Ser Pro His Ser Gln Pro Trp
            35   40   45

Gln Ala Ala Leu Val Met Glu Asn Glu Leu Phe Cys Ser Gly Val Leu
    50   55   60

Val His Pro Gln Trp Val Leu Ser Ala Ala His Cys Phe Gln Asn Ser
65   70   75   80

Tyr Thr Ile Gly Leu Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro
                85   90   95

Gly Ser Gln Met Val Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr
                100   105   110

Asn Arg Pro Leu Leu Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu
            115   120   125

Ser Val Ser Glu Ser Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln
    130   135   140

Cys Pro Thr Ala Gly Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu
145   150   155   160

54

```
Ala Asn Gly Arg Met Pro Thr Val Leu Gln Cys Val Asn Val Ser Val
            165             170             175

Val Ser Glu Glu Val Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro
            180             185             190

Ser Met Phe Cys Ala Gly Gly Gly His Asp Gln Lys Asp Ser Cys Asn
        195             200             205

Gly Asp Ser Gly Gly Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu
    210             215             220

Val Ser Phe Gly Lys Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val
225             230             235             240

Tyr Thr Asn Leu Cys Lys Phe Thr Glu Trp Ile Glu Lys
            245             250
```

```
<210>  70
<211>  287
<212>  PRT
<213>  Homo sapiens

<400>  70
```

```
Met Ala Thr Ala Arg Pro Pro Trp Met Trp Val Leu Cys Ala Leu Ile
1               5               10              15

Thr Ala Leu Leu Leu Gly Val Thr Glu His Val Leu Ala Asn Asn Asp
            20              25              30

Val Ser Cys Asp His Pro Ser Asn Thr Val Pro Ser Gly Ser Asn Gln
        35              40              45

Asp Leu Gly Ala Gly Ala Gly Glu Asp Ala Arg Ser Asp Asp Ser Ser
    50              55              60

Ser Arg Ile Ile Asn Gly Ser Asp Cys Asp Met His Thr Gln Pro Trp
65              70              75              80

Gln Ala Ala Leu Leu Leu Arg Pro Asn Gln Leu Tyr Cys Gly Ala Val
            85              90              95

Leu Val His Pro Gln Trp Leu Leu Thr Ala Ala His Cys Arg Lys Lys
            100             105             110

Val Phe Arg Val Arg Leu Gly His Tyr Ser Leu Ser Pro Val Tyr Glu
        115             120             125

Ser Gly Gln Gln Met Phe Gln Gly Val Lys Ser Ile Pro His Pro Gly
    130             135             140

Tyr Ser His Pro Gly His Ser Asn Asp Leu Met Leu Ile Lys Leu Asn
145             150             155             160

Arg Arg Ile Arg Pro Thr Lys Asp Val Arg Pro Ile Asn Val Ser Ser
            165             170             175
```

55

His Cys Pro Ser Ala Gly Thr Lys Cys Leu Val Ser Gly Trp Gly Thr
        180   185   190

Thr Lys Ser Pro Gln Val His Phe Pro Lys Val Leu Gln Cys Leu Asn
        195   200   205

Ile Ser Val Leu Ser Gln Lys Arg Cys Glu Asp Ala Tyr Pro Arg Gln
        210   215   220

Ile Asp Asp Thr Met Phe Cys Ala Gly Asp Lys Ala Gly Arg Asp Ser
225   230   235   240

Cys Gln Gly Asp Ser Gly Gly Pro Val Val Cys Asn Gly Ser Leu Gln
                245   250   255

Gly Leu Val Ser Trp Gly Asp Tyr Pro Cys Ala Arg Pro Asn Arg Pro
                260   265   270

Gly Val Tyr Thr Asn Leu Cys Lys Phe Thr Lys Trp Ile Gln Glu
            275   280   285

<210> 71
<211> 239
<212> PRT
<213> Homo sapiens

<400> 71

Met Lys Lys Leu Met Val Val Leu Ser Leu Ile Ala Ala Ala Trp Ala
1   5   10   15

Glu Glu Gln Asn Lys Leu Val His Gly Gly Pro Cys Asp Lys Thr Ser
            20   25   30

His Pro Tyr Gln Ala Ala Leu Tyr Thr Ser Gly His Leu Leu Cys Gly
            35   40   45

Gly Val Leu Ile His Pro Leu Trp Val Leu Thr Ala Ala His Cys Lys
        50   55   60

Lys Pro Asn Leu Gln Val Phe Leu Gly Lys His Asn Leu Arg Gln Arg
65   70   75   80

Glu Ser Ser Gln Glu Gln Ser Ser Val Val Arg Ala Val Ile His Pro
                85   90   95

Asp Tyr Asp Ala Ala Ser His Asp Gln Asp Ile Met Leu Leu Arg Leu
            100   105   110

Ala Arg Pro Ala Lys Leu Ser Glu Leu Ile Gln Pro Leu Pro Leu Glu
            115   120   125

Arg Asp Cys Ser Ala Asn Thr Thr Ser Cys His Ile Leu Gly Trp Gly
            130   135   140

Lys Thr Ala Asp Gly Asp Phe Pro Asp Thr Ile Gln Cys Ala Tyr Ile
145   150   155   160

His Leu Val Ser Arg Glu Glu Cys Glu His Ala Tyr Pro Gly Gln Ile
            165   170   175

56

```
Thr Gln Asn Met Leu Cys Ala Gly Asp Glu Lys Tyr Gly Lys Asp Ser
            180                 185                 190

Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Gly Asp His Leu Arg
            195                 200                 205

Gly Leu Val Ser Trp Gly Asn Ile Pro Cys Gly Ser Lys Glu Lys Pro
    210                 215                 220

Gly Val Tyr Thr Asn Val Cys Arg Tyr Thr Asn Trp Ile Gln Lys
225                 230                 235



<210>  72
<211>  275
<212>  PRT
<213>  Homo sapiens

<400>  72

Met Gly Arg Pro Arg Pro Arg Ala Ala Lys Thr Trp Met Phe Leu Leu
1               5               10                  15

Leu Leu Gly Gly Ala Trp Ala Gly His Ser Arg Ala Gln Glu Asp Lys
            20                  25                  30

Val Leu Gly Gly His Glu Cys Gln Pro His Ser Gln Pro Trp Gln Ala
            35                  40                  45

Ala Leu Phe Gln Gly Gln Gln Leu Leu Cys Gly Gly Val Leu Val Gly
    50                  55                  60

Gly Asn Trp Val Leu Thr Ala Ala His Cys Lys Lys Pro Lys Tyr Thr
65                  70                  75                  80

Val Arg Leu Gly Asp His Ser Leu Gln Asn Lys Asp Gly Pro Glu Gln
            85                  90                  95

Glu Ile Pro Val Val Gln Ser Ile Pro His Pro Cys Tyr Asn Ser Ser
            100                 105                 110

Asp Val Glu Asp His Asn His Asp Leu Met Leu Leu Gln Leu Arg Asp
            115                 120                 125

Gln Ala Ser Leu Gly Ser Lys Val Lys Pro Ile Ser Leu Ala Asp His
    130                 135                 140

Cys Thr Gln Pro Gly Gln Lys Cys Thr Val Ser Gly Trp Gly Thr Val
145                 150                 155                 160

Thr Ser Pro Arg Glu Asn Phe Pro Asp Thr Leu Asn Cys Ala Glu Val
            165                 170                 175

Lys Ile Phe Pro Gln Lys Lys Cys Glu Asp Ala Tyr Pro Gly Gln Ile
            180                 185                 190

Thr Asp Gly Met Val Cys Ala Gly Ser Ser Lys Gly Ala Asp Thr Cys
            195                 200                 205
```

57

```
Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Asp Gly Ala Leu Gln Gly
    210                 215             220

Ile Thr Ser Trp Gly Ser Asp Pro Cys Gly Arg Ser Asp Lys Pro Gly
225                 230             235                 240

Val Tyr Thr Asn Ile Cys Arg Tyr Leu Asp Trp Ile Lys Lys Thr Leu
                245                 250                 255

Ser Pro Met Arg Ile Leu Gln Leu Ile Leu Leu Ala Leu Ala Thr Gly
            260                 265                 270

Leu Val Gly
        275


<210>   73
<211>   228
<212>   PRT
<213>   Homo sapiens

<400>   73

Gly Glu Thr Arg Ile Ile Lys Gly Phe Glu Cys Lys Pro His Ser Gln
1               5               10                  15

Pro Trp Gln Ala Ala Leu Phe Glu Lys Thr Arg Leu Leu Cys Gly Ala
            20              25                  30

Thr Leu Ile Ala Pro Arg Trp Leu Leu Thr Ala Ala His Cys Leu Lys
        35              40                  45

Pro Arg Tyr Ile Val His Leu Gly Gln His Asn Leu Gln Lys Glu Glu
    50                  55                  60

Gly Cys Glu Gln Thr Arg Thr Ala Thr Glu Ser Phe Pro His Pro Gly
65                  70                  75                  80

Phe Asn Asn Ser Leu Pro Asn Lys Asp His Arg Asn Asp Ile Met Leu
            85                  90                  95

Val Lys Met Ala Ser Pro Val Ser Ile Thr Trp Ala Val Arg Pro Leu
            100                 105                 110

Thr Leu Ser Ser Arg Cys Val Thr Ala Gly Thr Ser Cys Leu Ile Ser
        115                 120                 125

Gly Trp Gly Ser Thr Ser Ser Pro Gln Leu Arg Leu Pro His Thr Leu
    130                 135                 140

Arg Cys Ala Asn Ile Thr Ile Ile Glu His Gln Lys Cys Glu Asn Ala
145                 150                 155                 160

Tyr Pro Gly Asn Ile Thr Asp Thr Met Val Cys Ala Ser Val Gln Glu
                165                 170                 175

Gly Gly Lys Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys
            180                 185                 190

Asn Gln Ser Leu Gln Gly Ile Ile Ser Trp Gly Gln Asp Pro Cys Ala
        195                 200                 205
```

58

```
Ile Thr Arg Lys Pro Gly Val Tyr Thr Lys Val Cys Lys Tyr Val Asp
    210                 215                 220

Trp Ile Gln Glu
225



<210>  74
<211>  255
<212>  PRT
<213>  Homo sapiens

<400>  74

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1               5                   10                  15

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
            20                  25                  30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
        35                  40                  45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
    50                  55                  60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65                  70                  75                  80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
                85                  90                  95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
            100                 105                 110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
        115                 120                 125

Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu Pro Thr Gln
    130                 135                 140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145                 150                 155                 160

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
                165                 170                 175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
            180                 185                 190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
        195                 200                 205

Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
    210                 215                 220

Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala Leu Pro Glu Arg Pro
225                 230                 235                 240
```

59

```
Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile Lys Asp
                245                 250                 255


<210>   75
<211>   255
<212>   PRT
<213>   Homo sapiens

<400>   75

Met Trp Asp Leu Val Leu Ser Ile Ala Leu Ser Val Gly Cys Thr Gly
1               5                   10                  15

Ala Val Pro Leu Ile Gln Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
                20                  25                  30

Lys His Ser Gln Pro Trp Gln Val Ala Val Tyr Ser His Gly Trp Ala
            35                  40                  45

His Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
        50              55                  60

His Cys Leu Lys Lys Asn Ser Gln Val Trp Leu Gly Arg His Asn Leu
65                  70                  75                      80

Phe Glu Pro Glu Asp Thr Gly Gln Arg Val Pro Val Ser His Ser Phe
                85                  90                  95

Pro His Pro Leu Tyr Asn Met Ser Leu Leu Lys His Gln Ser Leu Arg
            100                 105                 110

Pro Asp Glu Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
            115                 120                 125

Pro Ala Lys Ile Thr Asp Val Val Lys Val Leu Gly Leu Pro Thr Gln
    130                 135                 140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145                 150                 155                 160

Glu Pro Glu Glu Phe Leu Arg Pro Arg Ser Leu Gln Cys Val Ser Leu
                165                 170                 175

His Leu Leu Ser Asn Asp Met Cys Ala Arg Ala Tyr Ser Glu Lys Val
            180                 185                 190

Thr Glu Phe Met Leu Cys Ala Gly Leu Trp Thr Gly Gly Lys Asp Thr
            195                 200                 205

Cys Gly Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
    210                 215                 220

Gly Ile Thr Ser Trp Gly Pro Glu Pro Cys Ala Leu Pro Glu Lys Pro
225                 230                 235                 240

Ala Val Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile Lys Asp
                245                 250                 255
```

60

<210> 76
<211> 256
<212> PRT
<213> Homo sapiens

<400> 76

Met Trp Phe Leu Val Leu Cys Leu Ala Leu Ser Leu Gly Gly Thr Gly
1   5   10   15

Ala Ala Pro Pro Ile Gln Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
            20   25   30

Gln His Ser Gln Pro Trp Gln Ala Ala Leu Tyr His Phe Ser Thr Phe
        35   40   45

Gln Cys Gly Gly Ile Leu Val His Arg Gln Trp Val Leu Thr Ala Ala
    50   55   60

His Cys Ile Ser Asp Asn Tyr Gln Leu Trp Leu Gly Arg His Asn Leu
65   70   75   80

Phe Asp Asp Glu Asn Thr Ala Gln Phe Val His Val Ser Glu Ser Phe
                85   90   95

Pro His Pro Gly Phe Asn Met Ser Leu Leu Glu Asn His Thr Arg Gln
            100   105   110

Ala Asp Glu Asp Tyr Ser His Asp Leu Met Leu Leu Arg Leu Thr Glu
        115   120   125

Pro Ala Asp Thr Ile Thr Asp Ala Val Lys Val Val Glu Leu Pro Thr
        130   135   140

Glu Glu Pro Glu Val Gly Ser Thr Cys Leu Ala Ser Gly Trp Gly Ser
145   150   155   160

Ile Glu Pro Glu Asn Phe Ser Phe Pro Asp Asp Leu Gln Cys Val Asp
                165   170   175

Leu Lys Ile Leu Pro Asn Asp Glu Cys Lys Lys Ala His Val Gln Lys
            180   185   190

Val Thr Asp Phe Met Leu Cys Val Gly His Leu Glu Gly Gly Lys Asp
        195   200   205

Thr Cys Val Gly Asp Ser Gly Gly Pro Leu Met Cys Asp Gly Val Leu
    210   215   220

Gln Gly Val Thr Ser Trp Gly Tyr Val Pro Cys Gly Thr Pro Asn Lys
225   230   235   240

Pro Ser Val Ala Val Arg Val Leu Ser Tyr Val Lys Trp Ile Glu Asp
            245   250   255

<210> 77
<211> 241
<212> PRT
<213> Homo sapiens

61

<400> 77

Met Asn Pro Leu Leu Ile Leu Thr Phe Val Ala Ala Ala Leu Ala Ala
1   5   10   15

Pro Phe Asp Asp Asp Asp Lys Ile Val Gly Gly Tyr Asn Cys Glu Glu
            20   25   30

Asn Ser Val Pro Tyr Gln Val Ser Leu Asn Ser Gly Tyr His Phe Cys
        35   40   45

Gly Gly Ser Leu Ile Asn Glu Gln Trp Val Val Ser Ala Gly His Cys
    50   55   60

Tyr Lys Ser Arg Ile Gln Val Arg Leu Gly Glu His Asn Ile Glu Val
65   70   75   80

Leu Glu Gly Asn Glu Gln Phe Ile Asn Ala Ala Lys Ile Ile Arg His
            85   90   95

Pro Gln Tyr Asp Arg Lys Thr Leu Asn Asn Asp Ile Met Leu Ile Lys
            100   105   110

Leu Ser Ser Arg Ala Val Ile Asn Ala Arg Val Ser Thr Ile Ser Leu
    115   120   125

Pro Thr Ala Pro Pro Ala Thr Gly Thr Lys Cys Leu Ile Ser Gly Trp
    130   135   140

Gly Asn Thr Ala Ser Ser Gly Ala Asp Tyr Pro Asp Glu Leu Gln Cys
145   150   155   160

Leu Asp Ala Pro Val Leu Ser Gln Ala Lys Cys Glu Ala Ser Tyr Pro
            165   170   175

Gly Lys Ile Thr Ser Asn Met Phe Cys Val Gly Phe Leu Glu Gly Gly
            180   185   190

Lys Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Val Val Cys Asn Gly
    195   200   205

Gln Leu Gln Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Lys Asn
    210   215   220

Lys Pro Gly Val Tyr Thr Lys Val Tyr Asn Tyr Val Lys Trp Ile Lys
225   230   235   240

Asn

<210> 78
<211> 261
<212> PRT
<213> Homo sapiens

<400> 78

Met Trp Val Pro Val Val Phe Leu Thr Leu Ser Val Thr Trp Ile Gly
1   5   10   15

62

Ala Ala Pro Leu Ile Leu Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
          20   25   30

Lys His Ser Gln Pro Trp Gln Val Leu Val Ala Ser Arg Gly Arg Ala
          35   40   45

Val Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
          50   55   60

His Cys Ile Arg Asn Lys Ser Val Ile Leu Leu Gly Arg His Ser Leu
65   70   75   80

Phe His Pro Glu Asp Thr Gly Gln Val Phe Gln Val Ser His Ser Phe
              85   90   95

Pro His Pro Leu Tyr Asp Met Ser Leu Leu Lys Asn Arg Phe Leu Arg
          100   105   110

Pro Gly Asp Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
          115   120   125

Pro Ala Glu Leu Thr Asp Ala Val Lys Val Met Asp Leu Pro Thr Gln
    130   135   140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145   150   155   160

Glu Pro Glu Glu Phe Leu Thr Pro Lys Lys Leu Gln Cys Val Asp Leu
              165   170   175

His Val Ile Ser Asn Asp Val Cys Ala Gln Val His Pro Gln Lys Val
              180   185   190

Thr Lys Phe Met Leu Cys Ala Gly Arg Trp Thr Gly Gly Lys Ser Thr
          195   200   205

Cys Ser Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
    210   215   220

Gly Ile Thr Ser Trp Gly Ser Glu Pro Cys Ala Leu Pro Glu Arg Pro
225   230   235   240

Ser Leu Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile Lys Asp Thr
          245   250   255

Ile Val Ala Asn Pro
          260

<210>   79
<211>   261
<212>   PRT
<213>   Homo sapiens

<400>   79

Met Trp Asp Leu Val Leu Ser Ile Ala Leu Ser Val Gly Cys Thr Gly
1   5   10   15

Ala Val Pro Leu Ile Gln Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
          20   25   30

63

```
Lys His Ser Gln Pro Trp Gln Val Ala Val Tyr Ser His Gly Trp Ala
        35              40              45

His Cys Gly Gly Val Leu Val His Pro Gln Trp Val Leu Thr Ala Ala
        50              55              60

His Cys Leu Lys Lys Asn Ser Gln Val Trp Leu Gly Arg His Asn Leu
65              70              75              80

Phe Glu Pro Glu Asp Thr Gly Gln Arg Val Pro Val Ser His Ser Phe
            85              90              95

Pro His Pro Leu Tyr Asn Met Ser Leu Leu Lys His Gln Ser Leu Arg
            100             105             110

Pro Asp Glu Asp Ser Ser His Asp Leu Met Leu Leu Arg Leu Ser Glu
        115             120             125

Pro Ala Lys Ile Thr Asp Val Val Lys Val Leu Gly Leu Pro Thr Gln
        130             135             140

Glu Pro Ala Leu Gly Thr Thr Cys Tyr Ala Ser Gly Trp Gly Ser Ile
145             150             155             160

Glu Pro Glu Glu Phe Leu Arg Pro Arg Ser Leu Gln Cys Val Ser Leu
            165             170             175

His Leu Leu Ser Asn Asp Met Cys Ala Arg Ala Tyr Ser Glu Lys Val
            180             185             190

Thr Glu Phe Met Leu Cys Ala Gly Leu Trp Thr Gly Gly Lys Asp Thr
        195             200             205

Cys Gly Gly Asp Ser Gly Gly Pro Leu Val Cys Asn Gly Val Leu Gln
        210             215             220

Gly Ile Thr Ser Trp Gly Pro Glu Pro Cys Ala Leu Pro Glu Lys Pro
225             230             235             240

Ala Val Tyr Thr Lys Val Val His Tyr Arg Lys Trp Ile Lys Asp Thr
            245             250             255

Ile Ala Ala Asn Pro
            260


<210>   80
<211>   262
<212>   PRT
<213>   Homo sapiens

<400>   80

Met Trp Phe Leu Val Leu Cys Leu Ala Leu Ser Leu Gly Gly Thr Gly
1               5               10              15

Ala Ala Pro Pro Ile Gln Ser Arg Ile Val Gly Gly Trp Glu Cys Glu
            20              25              30
```

64

Gln His Ser Gln Pro Trp Gln Ala Ala Leu Tyr His Phe Ser Thr Phe
        35   40   45

Gln Cys Gly Gly Ile Leu Val His Arg Gln Trp Val Leu Thr Ala Ala
        50   55   60

His Cys Ile Ser Asp Asn Tyr Gln Leu Trp Leu Gly Arg His Asn Leu
65   70   75   80

Phe Asp Asp Glu Asn Thr Ala Gln Phe Val His Val Ser Glu Ser Phe
                85   90   95

Pro His Pro Gly Phe Asn Met Ser Leu Leu Glu Asn His Thr Arg Gln
            100   105   110

Ala Asp Glu Asp Tyr Ser His Asp Leu Met Leu Leu Arg Leu Thr Glu
        115   120   125

Pro Ala Asp Thr Ile Thr Asp Ala Val Lys Val Val Glu Leu Pro Thr
        130   135   140

Glu Glu Pro Glu Val Gly Ser Thr Cys Leu Ala Ser Gly Trp Gly Ser
145   150   155   160

Ile Glu Pro Glu Asn Phe Ser Phe Pro Asp Asp Leu Gln Cys Val Asp
                165   170   175

Leu Lys Ile Leu Pro Asn Asp Glu Cys Lys Lys Ala His Val Gln Lys
            180   185   190

Val Thr Asp Phe Met Leu Cys Val Gly His Leu Glu Gly Gly Lys Asp
        195   200   205

Thr Cys Val Gly Asp Ser Gly Gly Pro Leu Met Cys Asp Gly Val Leu
        210   215   220

Gln Gly Val Thr Ser Trp Gly Tyr Val Pro Cys Gly Thr Pro Asn Lys
225   230   235   240

Pro Ser Val Ala Val Arg Val Leu Ser Tyr Val Lys Trp Ile Glu Asp
                245   250   255

Thr Ile Ala Glu Asn Ser
            260

<210>   81
<211>   254
<212>   PRT
<213>   Homo sapiens

<400>   81

Met Ala Thr Ala Gly Asn Pro Trp Gly Trp Phe Leu Gly Tyr Leu Ile
1   5   10   15

Leu Gly Val Ala Gly Ser Leu Val Ser Gly Ser Cys Ser Gln Ile Ile
            20   25   30

Asn Gly Glu Asp Cys Ser Pro His Ser Gln Pro Trp Gln Ala Ala Leu
        35   40   45

```
Val Met Glu Asn Glu Leu Phe Cys Ser Gly Val Leu Val His Pro Gln
    50              55              60

Trp Val Leu Ser Ala Ala His Cys Phe Gln Asn Ser Tyr Thr Ile Gly
65              70              75              80

Leu Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met
            85              90              95

Val Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Pro Leu
            100             105             110

Leu Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu Ser Val Ser Glu
            115             120             125

Ser Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln Cys Pro Thr Ala
    130             135             140

Gly Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu Ala Asn Gly Arg
145             150             155             160

Met Pro Thr Val Leu Gln Cys Val Asn Val Ser Val Val Ser Glu Glu
            165             170             175

Val Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe Cys
            180             185             190

Ala Gly Gly Gly His Asp Gln Lys Asp Ser Cys Asn Gly Asp Ser Gly
            195             200             205

Gly Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Val Ser Phe Gly
    210             215             220

Lys Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val Tyr Thr Asn Leu
225             230             235             240

Cys Lys Phe Thr Glu Trp Ile Glu Lys Thr Val Gln Ala Ser
            245             250


<210>  82
<211>  247
<212>  PRT
<213>  Homo sapiens

<400>  82

Met Asn Pro Leu Leu Ile Leu Thr Phe Val Ala Ala Ala Leu Ala Ala
1           5               10              15

Pro Phe Asp Asp Asp Asp Lys Ile Val Gly Gly Tyr Asn Cys Glu Glu
            20              25              30

Asn Ser Val Pro Tyr Gln Val Ser Leu Asn Ser Gly Tyr His Phe Cys
            35              40              45

Gly Gly Ser Leu Ile Asn Glu Gln Trp Val Val Ser Ala Gly His Cys
    50              55              60
```

66

Tyr Lys Ser Arg Ile Gln Val Arg Leu Gly Glu His Asn Ile Glu Val
65   70   75   80

Leu Glu Gly Asn Glu Gln Phe Ile Asn Ala Ala Lys Ile Ile Arg His
            85   90   95

Pro Gln Tyr Asp Arg Lys Thr Leu Asn Asn Asp Ile Met Leu Ile Lys
            100   105   110

Leu Ser Ser Arg Ala Val Ile Asn Ala Arg Val Ser Thr Ile Ser Leu
            115   120   125

Pro Thr Ala Pro Pro Ala Thr Gly Thr Lys Cys Leu Ile Ser Gly Trp
    130   135   140

Gly Asn Thr Ala Ser Ser Gly Ala Asp Tyr Pro Asp Glu Leu Gln Cys
145   150   155   160

Leu Asp Ala Pro Val Leu Ser Gln Ala Lys Cys Glu Ala Ser Tyr Pro
            165   170   175

Gly Lys Ile Thr Ser Asn Met Phe Cys Val Gly Phe Leu Glu Gly Gly
            180   185   190

Lys Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Val Val Cys Asn Gly
    195   200   205

Gln Leu Gln Gly Val Val Ser Trp Gly Asp Gly Cys Ala Gln Lys Asn
    210   215   220

Lys Pro Gly Val Tyr Thr Lys Val Tyr Asn Tyr Val Lys Trp Ile Lys
225   230   235   240

Asn Thr Ile Ala Ala Asn Ser
            245

<210> 83
<211> 260
<212> PRT
<213> Homo sapiens

<400> 83

Met Gly Arg Pro Arg Pro Arg Ala Ala Lys Thr Trp Met Phe Leu Leu
1   5   10   15

Leu Leu Gly Gly Ala Trp Ala Gly His Ser Arg Ala Gln Glu Asp Lys
            20   25   30

Val Leu Gly Gly His Glu Cys Gln Pro His Ser Gln Pro Trp Gln Ala
    35   40   45

Ala Leu Phe Gln Gly Gln Gln Leu Leu Cys Gly Gly Val Leu Val Gly
    50   55   60

Gly Asn Trp Val Leu Thr Ala Ala His Cys Lys Lys Pro Lys Tyr Thr
65   70   75   80

Val Arg Leu Gly Asp His Ser Leu Gln Asn Lys Asp Gly Pro Glu Gln
            85   90   95

Glu Ile Pro Val Val Gln Ser Ile Pro His Pro Cys Tyr Asn Ser Ser
            100   105   110

Asp Val Glu Asp His Asn His Asp Leu Met Leu Leu Gln Leu Arg Asp
            115   120   125

Gln Ala Ser Leu Gly Ser Lys Val Lys Pro Ile Ser Leu Ala Asp His
            130   135   140

Cys Thr Gln Pro Gly Gln Lys Cys Thr Val Ser Gly Trp Gly Thr Val
145   150   155   160

Thr Ser Pro Arg Glu Asn Phe Pro Asp Thr Leu Asn Cys Ala Glu Val
            165   170   175

Lys Ile Phe Pro Gln Lys Lys Cys Glu Asp Ala Tyr Pro Gly Gln Ile
            180   185   190

Thr Asp Gly Met Val Cys Ala Gly Ser Ser Lys Gly Ala Asp Thr Cys
            195   200   205

Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Asp Gly Ala Leu Gln Gly
            210   215   220

Ile Thr Ser Trp Gly Ser Asp Pro Cys Gly Arg Ser Asp Lys Pro Gly
225   230   235   240

Val Tyr Thr Asn Ile Cys Arg Tyr Leu Asp Trp Ile Lys Lys Ile Ile
            245   250   255

Gly Ser Lys Gly
            260

<210>   84
<211>   244
<212>   PRT
<213>   Homo sapiens

<400>   84

Met Lys Lys Leu Met Val Val Leu Ser Leu Ile Ala Ala Ala Trp Ala
1   5   10   15

Glu Glu Gln Asn Lys Leu Val His Gly Gly Pro Cys Asp Lys Thr Ser
            20   25   30

His Pro Tyr Gln Ala Ala Leu Tyr Thr Ser Gly His Leu Leu Cys Gly
            35   40   45

Gly Val Leu Ile His Pro Leu Trp Val Leu Thr Ala Ala His Cys Lys
            50   55   60

Lys Pro Asn Leu Gln Val Phe Leu Gly Lys His Asn Leu Arg Gln Arg
65   70   75   80

Glu Ser Ser Gln Glu Gln Ser Ser Val Val Arg Ala Val Ile His Pro
            85   90   95

68

Asp Tyr Asp Ala Ala Ser His Asp Gln Asp Ile Met Leu Leu Arg Leu
            100   105   110

Ala Arg Pro Ala Lys Leu Ser Glu Leu Ile Gln Pro Leu Pro Leu Glu
            115   120   125

Arg Asp Cys Ser Ala Asn Thr Thr Ser Cys His Ile Leu Gly Trp Gly
    130   135   140

Lys Thr Ala Asp Gly Asp Phe Pro Asp Thr Ile Gln Cys Ala Tyr Ile
145   150   155   160

His Leu Val Ser Arg Glu Glu Cys Glu His Ala Tyr Pro Gly Gln Ile
            165   170   175

Thr Gln Asn Met Leu Cys Ala Gly Asp Glu Lys Tyr Gly Lys Asp Ser
            180   185   190

Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Gly Asp His Leu Arg
            195   200   205

Gly Leu Val Ser Trp Gly Asn Ile Pro Cys Gly Ser Lys Glu Lys Pro
    210   215   220

Gly Val Tyr Thr Asn Val Cys Arg Tyr Thr Asn Trp Ile Gln Lys Thr
225   230   235   240

Ile Gln Ala Lys

<210>   85
<211>   258
<212>   PRT
<213>   Homo sapiens

<400>   85

Met Ala Thr Ala Gly Asn Pro Trp Gly Trp Phe Leu Gly Tyr Leu Ile
1   5   10   15

Leu Gly Val Ala Gly Ser Leu Val Ser Gly Glu Met Ser Pro Ser Cys
            20   25   30

Ser Gln Ile Ile Asn Gly Glu Asp Cys Ser Pro His Ser Gln Pro Trp
            35   40   45

Gln Ala Ala Leu Val Met Glu Asn Glu Leu Phe Cys Ser Gly Val Leu
    50   55   60

Val His Pro Gln Trp Val Leu Ser Ala Ala His Cys Phe Gln Asn Ser
65   70   75   80

Tyr Thr Ile Gly Leu Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro
            85   90   95

Gly Ser Gln Met Val Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr
            100   105   110

Asn Arg Pro Leu Leu Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu
            115   120   125

```
Ser Val Ser Glu Ser Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln
    130             135             140

Cys Pro Thr Ala Gly Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu
145             150             155                 160

Ala Asn Gly Arg Met Pro Thr Val Leu Gln Cys Val Asn Val Ser Val
                165             170             175

Val Ser Glu Glu Val Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro
            180             185             190

Ser Met Phe Cys Ala Gly Gly His Asp Gln Lys Asp Ser Cys Asn
        195             200             205

Gly Asp Ser Gly Gly Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu
    210             215             220

Val Ser Phe Gly Lys Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val
225             230             235             240

Tyr Thr Asn Leu Cys Lys Phe Thr Glu Trp Ile Glu Lys Thr Val Gln
            245             250             255

Ala Ser



<210>  86
<211>  250
<212>  PRT
<213>  Homo sapiens

<400>  86

Met Arg Ile Leu Gln Leu Ile Leu Leu Ala Leu Ala Thr Gly Leu Val
1           5               10              15

Gly Gly Glu Thr Arg Ile Ile Lys Gly Phe Glu Cys Lys Pro His Ser
            20              25              30

Gln Pro Trp Gln Ala Ala Leu Phe Glu Lys Thr Arg Leu Leu Cys Gly
        35              40              45

Ala Thr Leu Ile Ala Pro Arg Trp Leu Leu Thr Ala Ala His Cys Leu
    50              55              60

Lys Pro Arg Tyr Ile Val His Leu Gly Gln His Asn Leu Gln Lys Glu
65              70              75              80

Glu Gly Cys Glu Gln Thr Arg Thr Ala Thr Glu Ser Phe Pro His Pro
            85              90              95

Gly Phe Asn Asn Ser Leu Pro Asn Lys Asp His Arg Asn Asp Ile Met
            100             105             110

Leu Val Lys Met Ala Ser Pro Val Ser Ile Thr Trp Ala Val Arg Pro
        115             120             125
```

70

Leu Thr Leu Ser Ser Arg Cys Val Thr Ala Gly Thr Ser Cys Leu Ile
    130   135   140

Ser Gly Trp Gly Ser Thr Ser Ser Pro Gln Leu Arg Leu Pro His Thr
145   150   155   160

Leu Arg Cys Ala Asn Ile Thr Ile Ile Glu His Gln Lys Cys Glu Asn
                165   170   175

Ala Tyr Pro Gly Asn Ile Thr Asp Thr Met Val Cys Ala Ser Val Gln
            180   185   190

Glu Gly Gly Lys Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val
            195   200   205

Cys Asn Gln Ser Leu Gln Gly Ile Ile Ser Trp Gly Gln Asp Pro Cys
    210   215   220

Ala Ile Thr Arg Lys Pro Gly Val Tyr Thr Lys Val Cys Lys Tyr Val
225   230   235   240

Asp Trp Ile Gln Glu Thr Met Lys Asn Asn
                245   250

<210> 87
<211> 257
<212> PRT
<213> Homo sapiens

<400> 87

Met Ala Arg Ser Leu Leu Leu Pro Leu Gln Ile Leu Leu Leu Ser Leu
1   5   10   15

Ala Leu Glu Thr Ala Gly Glu Glu Ala Gln Gly Asp Lys Ile Ile Asp
            20   25   30

Gly Ala Pro Cys Ala Arg Gly Ser His Pro Trp Gln Val Ala Leu Leu
            35   40   45

Ser Gly Asn Gln Leu His Cys His Ser Cys Cys Glu Gly Gly Val Leu
    50   55   60

Val Asn Glu Arg Trp Val Leu Thr Ala Ala His Cys Lys Met Asn Glu
65   70   75   80

Tyr Thr Val His Leu Gly Ser Asp Thr Leu Gly Asp Arg Arg Ala Gln
                85   90   95

Arg Ile Lys Ala Ser Lys Ser Phe Arg His Pro Gly Tyr Ser Thr Gln
            100   105   110

Thr His Val Asn Asp Leu Met Leu Val Lys Leu Asn Ser Gln Ala Arg
            115   120   125

Leu Ser Ser Met Val Lys Lys Val Arg Leu Pro Ser Arg Cys Glu Pro
    130   135   140

Pro Gly Thr Thr Cys Thr Val Ser Gly Trp Gly Thr Thr Thr Ser Pro
145   150   155   160

71

```
Asp Val Thr Phe Pro Asp Leu Met Cys Val Asp Val Lys Leu Ile Ser
                165             170             175

Pro Gln Asp Cys Thr Lys Val Tyr Lys Asp Leu Leu Glu Asn Ser Met
                180             185             190

Leu Cys Ala Gly Ile Pro Asp Ser Lys Lys Asn Ala Cys Asn Gly Asp
            195             200             205

Ser Gly Gly Pro Leu Val Cys Arg Gly Thr Leu Gln Gly Leu Val Ser
    210             215             220

Trp Gly Thr Phe Pro Cys Gly Gln Pro Asn Asp Pro Gly Val Tyr Thr
225             230             235             240

Gln Val Cys Lys Phe Thr Lys Trp Ile Asn Asp Thr Met Lys Lys His
                245             250             255

Arg
```

```
<210>  88
<211>  276
<212>  PRT
<213>  Homo sapiens

<400>  88
```

```
Met Arg Ala Pro His Leu His Leu Ser Ala Ala Ser Gly Ala Arg Ala
1               5               10              15

Leu Ala Lys Leu Leu Pro Leu Leu Met Ala Gln Leu Trp Ala Ala Glu
            20              25              30

Ala Ala Leu Leu Pro Gln Asn Asp Thr Arg Leu Asp Pro Glu Ala Tyr
            35              40              45

Gly Ala Pro Cys Ala Arg Gly Ser Gln Pro Trp Gln Val Ser Leu Phe
    50              55              60

Asn Gly Leu Ser Phe His Cys Ala Gly Val Leu Val Asp Gln Ser Trp
65              70              75              80

Val Leu Thr Ala Ala His Cys Gly Asn Lys Pro Leu Trp Ala Arg Val
            85              90              95

Gly Asp Asp His Leu Leu Leu Leu Gln Gly Glu Gln Leu Arg Arg Thr
            100             105             110

Thr Arg Ser Val Val His Pro Lys Tyr His Gln Gly Ser Gly Pro Ile
            115             120             125

Leu Pro Arg Arg Thr Asp Glu His Asp Leu Met Leu Leu Lys Leu Ala
    130             135             140

Arg Pro Val Val Pro Gly Pro Arg Val Arg Ala Leu Gln Leu Pro Tyr
145             150             155             160
```

72

```
Arg Cys Ala Gln Pro Gly Asp Gln Cys Gln Val Ala Gly Trp Gly Thr
              165             170             175

Thr Ala Ala Arg Arg Val Lys Tyr Asn Lys Gly Leu Thr Cys Ser Ser
              180             185             190

Ile Thr Ile Leu Ser Pro Lys Glu Cys Glu Val Phe Tyr Pro Gly Val
              195             200             205

Val Thr Asn Asn Met Ile Cys Ala Gly Leu Asp Arg Gly Gln Asp Pro
              210             215             220

Cys Gln Ser Asp Ser Gly Gly Pro Leu Val Cys Asp Glu Thr Leu Gln
225                 230             235                 240

Gly Ile Leu Ser Trp Gly Val Tyr Pro Cys Gly Ser Ala Gln His Pro
              245             250             255

Ala Val Tyr Thr Gln Ile Cys Lys Tyr Met Ser Trp Ile Asn Lys Val
              260             265             270

Ile Arg Ser Asn
          275


<210>   89
<211>   10
<212>   DNA
<213>   Homo sapiens

<400>   89
gcggccatgg                                                          10


<210>   90
<211>   10
<212>   DNA
<213>   Artificial

<220>
<223>   Kozak consensus sequence

<400>   90
gccvccatgg                                                          10



<210>   91
<211>   8
<212>   PRT
<213>   Homo sapiens

<400>   91

Trp Leu Leu Thr Ala Ala His Cys
1                   5


<210>   92
<211>   6
<212>   PRT
```

<213> Homo sapiens

<400> 92

Gly Asp Ser Gly Gly Pro
1   5

<210> 93
<211> 5
<212> PRT
<213> Homo sapiens

<400> 93

Asp Leu Met Leu Ile
1   5

<210> 94
<211> 7
<212> PRT
<213> Homo sapiens

<400> 94

Val Leu Thr Ala Ala His Cys
1   5

<210> 95
<211> 5
<212> PRT
<213> Homo sapiens

<400> 95

Asp Leu Arg Leu Leu
1   5

<210> 96
<211> 882
<212> DNA
<213> Homo sapiens

<400> 96
atggctacag caagacccc ctggatgtgg gtgctctgtg ctctgatcac agccttgctt   60

ctgggggtca cagagcatgt tctcgccaac aatgatgttt cctgtgacca ccctctaac   120

accgtgccct ctgggagcaa ccaggacctg ggagctgggg ccggggaaga cgcccggtcg   180

gatgacagca gcagccgcat catcaatgga tccgactgcg atatgcacac ccagccgtgg   240

caggccgcgc tgttgctaag gcccaaccag ctctactgcg gggcggtgtt ggtgcatcca   300

cagtggctgc tcacggccgc ccactgcagg aagaaagttt tcagagtccg tctcggccac   360

tactccctgt caccagttta tgaatctggg cagcagatgt tccaggggt caaatccatc   420

```
ccccaccctg gctactccca ccctggccac tctaacgacc tcatgctcat caaactgaac      480

agaagaattc gtcccactaa agatgtcaga cccatcaacg tctcctctca ttgtccctct      540

gctgggacaa agtgcttggt gtctggctgg gggacaacca agagccccca agtgcacttc      600

cctaaggtcc tccagtgctt gaatatcagc gtgctaagtc agaaaaggtg cgaggatgct      660

tacccgagac agatagatga caccatgttc tgcgccggtg acaaagcagg tagagactcc      720

tgccagggtg attctggggg gcctgtggtc tgcaatggct ccctgcaggg actcgtgtcc      780

tggggagatt acccttgtgc ccggcccaac agaccgggtg tctacacgaa cctctgcaag      840

ttcaccaagt ggatccagga aaccatccag gccaactcct ga                        882
```

75